



ESA Biological Evaluation For CWA Section 316(b) Rulemaking

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U.S. Environmental Protection Agency

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1. Purpose of Biological Evaluation

This Biological Evaluation (BE) addresses the potential effects of the United States Environmental Protection Agency's (EPA) regulation of facilities using cooling water intake structures (CWISs) under Section 316(b) the Clean Water Act (CWA).¹ This rulemaking affects facilities that withdraw cooling water from waters of the United States, and which have or require an NPDES (National Pollutant Discharge Elimination System) permit issued under section 402 of the CWA. [REDACTED]

The proposed action (i.e., the final 316(b) rule) reduces the adverse environmental impacts (AEI) to aquatic biota and communities caused by withdrawals of water from streams, rivers, estuaries and coastal marine waters by CWISs.³ This regulation is anticipated to affect aquatic or aquatic-dependent species listed as threatened and endangered (T&E)⁴ under the jurisdiction of the Endangered Species Act (ESA) as well as federally designated critical habitats.⁵

ESA Section 7(a)(2) requires Federal agencies, in consultation with the U.S. Fish and Wildlife Service (U.S. FWS) and National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS), (collectively referred to as "the Services"⁶), to insure that any federal actions do not "jeopardize the continued existence of any endangered species or threatened

¹ The term "cooling water intake structure" means the total physical structure and any associated waterways used to withdraw water from waters of the United States, provided that at least 25 percent of the water withdrawn is used for cooling purposes.

² [REDACTED]

³ AEI occurs whenever negative effects of a CWIS, including entrainment or impingement mortality, habitat alteration and indirect effects, occur. AEI may be felt by many species in all trophic levels. A species need not be directly affected but nevertheless harmed due to loss of food organisms or other associated organisms or degradation of habitat in some way necessary for the well-being and continued survival of the population.

⁴ To simplify the discussion, in this document EPA uses the terms "T&E species" and "special status species" interchangeably to mean all species that are specifically listed as threatened or endangered, plus species proposed for listing at the federal level.

⁵ Critical habitat is defined as: specific areas within the geographical area occupied by the species at the time of listing, if they contain physical or biological features essential to conservation, and those features may require special management considerations or protection and or specific areas outside the geographical area occupied by the species if the agency determines that the area itself is essential for conservation.

⁶ The U.S. Department of the Interior [through the U.S. Fish and Wildlife Service (U.S. FWS)] and the U.S. Department of Commerce [(through the National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS)] share responsibility for administration of ESA Section 7. NOAA NMFS is responsible for species that inhabit marine environments and anadromous fish while the U.S. FWS is responsible for terrestrial and freshwater species and migratory birds.

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species or result in the destruction or adverse modification of [critical] habitat of such species” (16 U.S.C. § 1536(a)(2)). If EPA determines that the proposed action may affect listed species or critical habitat, then Section 7 consultation with the Services is required. If EPA determines that the final rule is not likely to adversely affect listed species or critical habitat, and receives written concurrence from the Services, formal consultation is not required.

The regulations implementing Section 7(a)(2) broadly define the scope of agency actions subject to consultation to encompass “all activities or programs of any kind authorized, funded, or carried out, in whole or in part, by Federal agencies” (50 C.F.R. § 402.02). Agencies must also consult on ongoing agency actions over which the federal agency retains, or is authorized to exercise, discretionary involvement or control (50 C.F.R. § 402.03; 50 C.F.R. § 402.16).

As part of the initiation of consultation, EPA provides the Services with the following information:

- Description of the proposed action
- Description of the specific areas affected by the action
- Description of listed species/critical habitat that may be affected by the action
- Description on the manner in which they may be affected by the action
- Analysis of any cumulative effects, which are the effects of future State or private activities that are reasonably certain to occur within the action area
- Relevant reports (e.g., Biological Evaluation)
- Other relevant available information (e.g., facility impingement and entrainment data, extrapolation as to potential “take” of T&E species) currently available.

This BE analyzes the potential effects of this action on listed T&E species and their designated critical habitat to inform EPA with regard to potential Section 7 consultation and to provide a process by which to ensure that the potential effects of the proposed action on threatened, endangered, and sensitive species receive full consideration in the decision-making process. The scope and format of this BE was prepared in a manner consistent with U.S. FWS guidance for preparing biological assessments (U.S. FWS 2012) as well as by preliminary discussions with and unofficial comments from the Services.

1.1 Overview of current conditions

The Section 316(b) final rule (hereafter, final rule) addresses AEI posed by cooling water withdrawal to aquatic species and communities. These impacts are caused through several means, including impingement mortality (IM) and entrainment mortality (EM) (collectively, I&E).^{7,8} Additional

⁷ Impingement Mortality: The death of aquatic organisms due to impingement, when fish and other aquatic life are trapped on equipment at the entrance to the CWISs. Note that impingement mortality need not occur immediately; impingement can cause harm to the organism, which results in mortality at some time after the impingement event. Impingement data for T&E species at the national scale is severely limited.

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adverse effects are associated with facility CWIS operation, including nonlethal impingement effects, thermal discharges, chemical effluents, flow modifications, and other impacts. Additionally, adverse effects may cascade through food webs, ultimately impacting species which are not themselves directly impacted by the operation of facilities in-scope of the final rule.

Threatened species are species “likely to become an endangered species within the foreseeable future throughout all or a significant portion of its range” (16 U.S.C. § 1532(20)). Endangered species are “any species which is in danger of extinction throughout all or a significant portion of its range” (16 U.S.C. § 1532(6)). These designations may be made because of low or rapidly declining population levels, loss of essential habitat, or life history stages that are particularly vulnerable to environmental alteration. In addition to T&E labels, the designation “species of concern” includes species that warrant special protection due to inherent vulnerabilities to habitat modification, disturbance, or other human impacts (NMFS 2012). Together, these anthropogenic stressors may result in the species becoming threatened or endangered in the foreseeable future.

Reviews of aquatic species’ conservation status over the past three decades have documented the cumulative effect of anthropogenic and natural stressors on freshwater aquatic ecosystems, resulting in a significant decline in the biodiversity and condition of indigenous fish, mussel and crayfish communities (Deacon et al. 1979; Williams et al. 1989; Williams et al. 1993; Taylor et al. 1996; Taylor et al. 2007; Jelks et al. 2008). Overall, aquatic species are disproportionately imperiled relative to terrestrial species. For example, 39 percent of freshwater and diadromous fish species (Jelks, Walsh et al. 2008), 67 percent of freshwater mussels (Williams et al. 1993) and 48 percent of crayfish (Taylor et al. 2007) are classified as T&E. A similar status review found that only 7 percent of North American bird and mammal species are currently imperiled (Wilcove and Master 2005).

Proximity to T&E species and/or designated critical habitat (in addition to consideration of Essential Fish Habitats)⁹ is a documented concern at many power plant facilities. For T&E species, I&E from CWISs may represent a substantial portion of annual reproduction. Consequently, I&E may either lengthen species recovery time, or hasten the demise of these species much more so than for species that are abundant. For this reason, the population-level and social values of T&E losses are likely to be disproportionately higher than the absolute number of losses that occur. Unfortunately, available quantitative and qualitative data on the effects of CWIS on T&E species are extremely limited. However, it is known that adverse effects of CWIS on T&E species may occur in several ways:

- Individual organisms of T&E species may suffer direct harm as a consequence of I&E. This direct loss of individuals may be particularly important because T&E species have severely depressed population levels that are approaching local, national, or global extinction.

⁸ Entrainment Mortality: The death of aquatic organisms due to entrainment, when organisms, most commonly eggs and larvae, are taken into the cooling system at a CWIS. In many facilities, entrained organisms are passed through the heat exchanger, then discharged back into the source body. This also includes the death of those fish and shellfish due to fine mesh screens or other technologies used to exclude the organisms from entrainment. Entrainment data for T&E species at the national scale is severely limited.

⁹ Essential Fish Habitat (EFH) is defined in the Magnuson-Stevens Act as “...those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.”

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- T&E species may suffer indirect harm if the CWIS substantially alters the food web in which these species interact. This might occur as a result of altered populations of predator or prey species, the removal of foundation species, or (for species with parasitic life history stages) the loss of host species.
- CWISs may alter habitat that is critical to the long-term survival of T&E species. This might occur as a consequence of changes in the thermal characteristics of local waterbodies, altered flow regimes, turbidity, or changes in substrate characteristics as a consequence of any of these changes.

The true impact of CWIS may be higher than estimated if concerns surrounding T&E species are not re-visited regularly during facility relicensing or permitting activities. For example, a review of the potential geographic overlap between ESA-listed species and licensed commercial nuclear power facilities in the U.S. was conducted in 1997 (Sackschewsky 1997). At that time, approximately 484 ESA-listed species (heavily dominated by terrestrial plants and vertebrates) were identified as potentially occurring near one or more of the 75 facility sites that were examined. Despite the fact that no quantitative take data were obtained or analyzed, this review required updating in only a few years because: (1) nearly 200 species were added to the ESA list between 1997 and 2003; (2) critical habitats were newly designated for many species; and (3) significantly more information became available online; allowing for more accurate and efficient evaluations of potential T&E species presence near power plants (Sackschewsky 2004).

Re-evaluation of 38 commercially licensed nuclear facilities in 2003 was conducted through searches of the Nuclear Regulatory Commission's (NRC) Agency-wide Documents Access and Management System (ADAMS) database to find documents related to the take of T&E species, management of T&E species, evaluations of potential effects of operation on T&E species, and consultation with federal resource management agencies regarding T&E species (Sackschewsky 2004). For the 38 re-evaluated facilities, a total of 452 T&E species, more than 80% of which were terrestrial plants and vertebrates, were identified as potentially occurring near one or more of the plants. Again, no take data were assessed, although information about each species was gathered to support an assessment of the probability of occurrence at each of the reactor sites (Sackschewsky 2004). Reviewing these issues, NRC concluded that regular review of ESA compliance at each licensed commercial nuclear power generating facility was warranted, particularly due to the periodic updating of species and designated critical habitat areas on the ESA lists. Similarly, regular reviews of ESA compliance at 316(b) regulated facilities is warranted in the future.

EPA or state environmental agencies re-issue National Pollutant Discharge Elimination System (NPDES) permits on a five-year cycle, thus providing an opportunity to regularly review ESA issues and adjust discharge permit conditions or monitoring requirements as needed. For example, the issuing agency can require facilities to collect additional information if data is missing, newly-designated T&E species or critical habitat are located in the vicinity of the facility, or other environmental conditions (e.g., water quality, flow) have changed since earlier studies. This information can include source water baseline biological characterization data such as: species present (including T&E), species susceptibility to I&E, spawning periods, and seasonal patterns of the local presence of species. However, a comprehensive characterization of I&E with respect to local T&E species, and consequent operational modifications and/or technology installation to reduce IM&E, is rarely conducted and as such, quantitative data of the effects of CWIS on T&E species is lacking.

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To investigate the extent to which CWIS effects on T&E species may be overlooked, NPDES permits at facilities subject to the 316(b) rule were reviewed to identify and summarize any permit requirements for reducing or preventing IM&E of T&E species (Abt Associates 2012b). Eight active power generating facilities with high number of identified overlaps with T&E species were selected for the review (see Section 3.3) in the belief that these permits would be likely to contain a discussion of considerations made for T&E species. Facilities in both freshwater and marine regions were chosen in this analysis. Facility NPDES permits and, if available, accompanying Fact Sheets were reviewed to identify whether characterization of T&E species had been conducted in the vicinity of the facility or if there were any identified T&E monitoring, operational management, or technology requirements in the active permit to reduce or prevent IM&E of T&E species. Despite choosing these facilities because of overlap with the habitat of T&E species, EPA's review of the eight permits indicated:

- None of the eight discharge permits reviewed had special conditions or requirements specifically aimed at protection or minimization of IM&E to T&E species;
- Where ESA considerations were noted, little detail was provided describing the methods used to establish a finding of no adverse risk;
- Where improvements to reduce IM&E through technological or management options were required, these requirements were due to concern for the resident aquatic community and not for specific T&E species; and
- Most concerns regarding facility impacts to aquatic receptors were focused on facility discharges particularly thermal pollution (which is regulated under CWA Section 316(a)) and not with the impingement and entrainment effects more commonly associated with CWISs.

[REDACTED]

1.2 Objectives of Proposed Action

The final rule modifies existing CWA Section 316(b) requirements governing CWISs. It establishes updated national performance requirements for the location, design, construction, and capacity of CWIS (Clean Water Act 1972). Section 316(b) states, in full:

Any standard established pursuant to section 301 or section 306 of [the Clean Water] Act and applicable to a point source shall require that the location, design, construction, and capacity of cooling water intake structures reflect the best technology available for minimizing adverse environmental impact.

Under the final rule, existing facilities must meet the best technology available (BTA) standards for minimizing adverse environmental impact in the form of new requirements for IM&E. [REDACTED]

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[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

1.3 Regulatory History

EPA established standards for CWISs at Phase II power producing facilities in 2004. This proposed final rule responds to the subsequent judicial decision of the U.S. Court of Appeals for the Second Circuit remanding to EPA parts of its rule (76 FR 22174-22288). Following the decision of the U.S. Court of Appeals for the Second Circuit, EPA suspended the Phase II regulations.

¹⁰ [REDACTED]

¹¹ [REDACTED]

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EPA has promulgated regulations setting effluent limitations guidelines and standards under sections 301, 304, and 306 of the CWA for more than 50 industries [40 CFR parts 405 through 471]. These effluent limitations guidelines and standards for categories of industrial dischargers are based on pollutants of concern discharged by the industry, the degree of control that can be attained using pollution control technology, consideration of various economic tests appropriate to each level of control, and other factors identified in Sections 304 and 306 of the CWA (such as non-water quality environmental impacts including energy impacts) (F76 FR 22174-22288). EPA has established effluent limitations guidelines and standards that apply to most of the industry categories that use cooling water intake structures (e.g., steam electric power generation, paper and allied products, petroleum refining, iron and steel manufacturing, and chemicals and allied products).

Section 316(b) regulations have been promulgated over several years in a phased approach. The Phase I rule was promulgated in December 2001. In this rule, EPA established regulations for the location, design, construction and capacity standards for CWIS at new facilities (68 FR 36749 June 2003). The Phase II rule, promulgated in 2004, set national standards for cooling water withdrawals at large, existing power producing facilities (USEPA 2004). Specifically, the Phase II rule applied to existing power-generating facilities that use CWIS with a total design intake flow of 50 million gallons per day (MGD) or more to withdraw cooling water from waters of the United States and which used at least 25 percent of the water withdrawn exclusively for cooling purposes (see 40 CFR 125.91). The Phase III rule, promulgated in 2006, established requirements for new offshore oil and gas extraction facilities that have a design intake flow threshold of greater than 2 MGD and that withdraw at least 25 percent of the water exclusively for cooling purposes.

The Phase II rule was challenged before the Second Circuit of the United States (*Riverkeeper, Inc. v. EPA*, 475 F.3d 83 (2d Circuit, 2007)). Subsequently, Phase II and the existing facility portion of Phase III were remanded to EPA for reconsideration. With several significant provisions of the Phase II rule affected by the judicial decision, and to reduce uncertainty to stakeholders about the continuing application of the rule, EPA chose to suspend the Phase II rule in March 2007 (72 FR 37107 July 2007).

In April 2011, EPA issued proposed requirements for implementing CWA 316(b) at all existing power generating, manufacturing and industrial facilities (76 FR 22174 April 2011). The April 2011 proposal combined Phases II and III into one rule, and provided a holistic approach to protecting aquatic life impacted by CWIS at such facilities. As part of the proposal, EPA also indicated it was developing a stated preference survey to estimate total willingness to pay (WTP) for improvements to fishery resources affected by 316(b) facilities.

EPA issued two Notices of Data Availability (NODA) in June 2012, presenting a summary of significant data EPA had received or collected since the 2011 proposal, results of the stated preference survey, a discussion of how EPA was considering incorporating these data in revised analyses supporting the final rule, and a discussion of possible revisions to the final rule that EPA was considering that were suggested by public comments (USEPA 2012). EPA is nearing completion of these analyses and is committed to finalizing requirements by June 2013.

1.4 Overview of Analysis Used to Assess Potential Effects

For initiation of Section 7 consultation, the Services request description of the specific areas affected by the proposed action as well as identification of all listed T&E species or critical habitat that may

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be affected by the action. Accordingly, EPA compiled a list of facilities known to be subject to the final rule, along with their CWIS locations (818 facilities). Within these locations, EPA also identified facilities likely to be in compliance with the impingement requirements of the final rule.

Due to uncertainty with respect to facility characteristics, not all facilities subject to the final rule could be positively identified. Accordingly, EPA compiled a list of manufacturing facilities with water-related NPDES permits that *may* be subject to the final rule (2,936 additional facilities) to ensure all locations with potential effects were identified. Extrapolating from industry survey data, EPA estimates a total of 3,674 facilities could be potentially subject to the final rule. Accordingly, the final rule is likely to impact fewer species than identified in this document, and uncertainty in the scale of impacts is a major source of uncertainty for the analysis (see below).

Because of a lack of data with respect to the take of T&E species at CWIS, EPA conducted a geographic overlap analysis to assess the potential effect of the final rule on T&E species. Briefly, this analysis compared the location and proximity of facilities with regulated CWISs with those of aquatic and aquatic-dependent T&E species and designated critical habitats. This analysis identified facilities for which there were potential CWIS-T&E species interactions, the number and identity of the T&E species potentially affected by each facility, and identified which T&E species and functional group were most likely to have interactions with CWISs.

Due to the uncertainty regarding the incomplete list of facilities and CWIS locations, a very conservative approach was adopted regarding the determination of potentially applicable T&E species. Since EPA does not have biological monitoring information or even site-specific facility characteristics for all facilities likely to be subject to the final rule, EPA used the underlying initial assumption that all listed aquatic or aquatic-dependent T&E species were potentially affected. This initial list of species was refined by removing species for which, due to geography, habitat locations, or trophic position, it could be easily and conclusively documented that facilities (and thus the proposed action) would have no effect on the species. Evaluation of the potential effects (direct and indirect) on the remaining species provides a conservative assessment of baseline conditions at CWIS (i.e., the current level of interaction between CWISs and T&E species and designated critical habitat locations). Whenever possible, this list of species was cross-referenced against IM&E studies obtained from 99 facilities (432 combinations of facility and year) to ensure no T&E species with reported take was overlooked. However, because T&E species are unlikely to be observed in baseline monitoring data, and because neither baseline aquatic habitat characterization reports nor monitoring data have been required for all facilities, take of listed species was observed at only 4 facilities, with no data newer than 1992.

Next, EPA applied the provisions of the final rule to the current characteristics of regulated facilities to identify those that would be required to modify their CWIS or operational flows to achieve the impingement requirements of the final rule. This provides an indicator of the potential for improvement in aquatic habitat, because modification of CWIS or operational flow is likely to reduce IM&E at these facilities. Accordingly T&E species having habitat overlaps with facilities required to modify their CWIS or operations flows may have decreased take and/or reduced AEI. A full description of this method is provided in Section 3.

1.5 Organization of the Document

The document is organized as follows:

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- Chapter 2 describes the nature of the actions proposed by EPA to implement the CWA Section 316(b) regulation (Section 2.1), identifies the facilities potentially regulated, and the geographic area(s) affected (Section 2.2). This chapter includes brief overviews of the major ecosystems (marine, estuarine, freshwater), habitats within those ecosystems, and aquatic communities potentially affected (Section 2.3). Finally, identification of the T&E species potentially affected by the proposed action is provided (Section 2.4)
- Chapter 3 describes the methodology used to estimate the potential impact of CWIS on T&E species and designated critical habitats, including sources of T&E information, the numbers of affected facilities, estimates of facility-T&E species overlaps, and numbers of T&E species known to be impacted.
- Chapter 4 describes the environmental baseline conditions with focus on natural or anthropogenic factors that the proposed action may affect the abundance or distribution of aquatic species including listed T&E species. These factors include thermal discharge, water quality, degradation or loss of habitat.
- Chapter 5 develops estimates of the amount of reduced I&E that would occur for ESA-listed species due to the final rule, as well as associated benefits due to habitat improvement.
- Chapter 6 considers the cumulative effect of Federal and non-Federal actions that are reasonably certain to occur within the action area in the foreseeable future.
- Chapter 7 is an effects determination of the final rule with regard to ESA-listed species and designated critical habitat. This section of the BE evaluates the likelihood and nature of effects to listed species or designated critical habitat due to EPA's proposed regulatory action and provides the basis for whether a ESA Section 7 formal consultation with the Services is warranted.

Additional relevant information on the facilities of interest (those in close proximity to ESA-listed resources) including the T&E species potentially affected by the implementation of the final rule and extrapolation as to potential "take" of T&E species are contained in Appendix A.

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2. Action and Action Area

2.1 Description of Proposed Action

The proposed action is the implementation of the CWA Section 316(b) final rule. [REDACTED]

[REDACTED]

Implementation of the final rule will reduce AEI to aquatic biota and communities caused by withdrawals of cooling water from streams, rivers, lakes, reservoirs, estuaries and coastal marine waters by CWISs of regulated facilities, along the subsequent discharge of thermal effluent¹³. The withdrawal of cooling water leads to I&E of a large number of aquatic organisms, including T&E if they are present in or adjacent to waterbodies that are a source of cooling water or which may receive discharges from facilities. Additionally, the removal and replacement of cooling water may have negative consequences on designated critical habitat.

For T&E species, IM&E from CWISs may represent a substantial portion of annual reproduction. Consequently, IM&E may either lengthen species recovery time, or hasten the demise of these species much more so than for species that are abundant. For this reason, the population-level and social values of T&E losses are likely to be disproportionately higher than the absolute number of losses that occur. Adverse effects of CWIS on T&E species may occur in several ways:

- Individual organisms among T&E species may suffer direct mortality as a consequence of IM&E. This direct loss of individuals may be particularly important because T&E species have severely depressed population levels that are approaching local, national, or global extinction.
- Individuals may suffer injury, which may reduce survival probability, reproductive potential and fitness.
- T&E species may suffer indirect harm if the CWIS substantially alters the food web in which these species interact. This might occur as a result of altered populations of predator or prey species, the removal of foundation species, or (for species with parasitic life history stages) the loss of host species.
- CWISs may alter habitat that is critical to the long-term survival of T&E species. This might occur as a consequence of changes in the thermal characteristics of local waterbodies, altered flow regimes, turbidity, or changes in substrate characteristics as a consequence of any of these changes.

¹² A complete description of the final rule's requirement can be found in Section 1.2.

¹³ Once-through cooling water is used to absorb waste heat. This warmed effluent is then discharged back into a surface water body.

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14 [REDACTED]

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rule will be affected. In particular, for manufacturing facilities with unknown intake flows, [REDACTED]

[REDACTED] This assumption provides an upper bound to the number of affected facilities, and in turn, provides us with a worst case scenario for the impacts on T&E species.

Conducting a search for existing facilities that hold a NPDES permit and share a NAICS industry classification code with a facility known to be subject to the rule resulted in an additional 2925 facilities that may be subject to the proposed action. Table 2-1 provides the number of potentially affected facilities by geographic region and broad industry category (i.e., manufacturing and electric power generation).

EPA identified 3,730 facilities which may be subject to the rule, including 575 electricity producers and 3155 manufacturing facilities (Table 2-1). Overall, EPA estimates that all 575 electricity producers and approximately 600 manufacturers will be subject to the final rule. Because we do not know the location of all 600 manufactures we included all 3155 manufactures in the industries known to use cooling water. Not all of these facilities, however, will have a cooling water intake. In addition it should be noted that the total number of facilities subject to the rule discussed here in the BE includes estimated baseline closures, and is thus different than the number of facilities analyzed in the technical support document and presented in the preamble. Manufacturing facilities identified by NPDES database queries were not assigned a geographic region due to data limitations. These totals include coastal power plants in the California, and all CWIS with DIF > 20 MGD in New York. Notably, however, facilities in these states are subject to stringent state regulations that are more protective than the final rule.

Table 2-1: Number of Potentially Affected Facilities by Industry and Geographic Region			
Region	Number of Potentially Affected Facilities		
	Electricity Producers	Manufacturers	Total
California	18	5	23
Great Lakes	41	16	57
Inland	428	192	620
Mid-Atlantic	42	6	48
Gulf of Mexico	18	4	22
North Atlantic	17	4	21
South Atlantic	11	3	14
Undefined	0	2925	2925
All Regions	575	3155	3730

EPA has determined that 280 facilities are likely to meet impingement requirements of the final rule, including all facilities which are subject to forthcoming California and New York state regulations. Although these facilities are subject to the requirements of the final rule, including determination of EM requirements, they may not be required to install additional technologies to reduce I&E due to the final rule. However, they may require additional measures to be implemented to be in compliance with the ESA. Consequently, they are not excluded from further analysis, and all estimates of take do not account for reductions expected to occur because of the implementation of these state-level rules.

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Geographic Regions

For the purposes of the 316(b) final rule, EPA's analysis examined CWIS impacts and regulatory benefits in seven study regions (California, North Atlantic, Mid-Atlantic, South Atlantic, Gulf of Mexico, Great Lakes, and Inland). The study regions were chosen based on regional similarities within ecosystems, aquatic species, and characteristics of commercial and recreational fishing activities. Based on the delineation between marine and freshwater ecosystems, these seven study regions were broadly categorized into Coastal, Great Lakes, and Inland regions. All procedures used to estimate the effects of CWIS at baseline and under the final rule were conducted within regions. Moreover, because only the 805 facilities verified as being subject to the rule have known water withdrawal rates, existing technology to reduce IM&E, and waterbodies from which withdrawal occurs are known, only these facilities were classified into 316(b) regions for the purposes of extrapolation.

Coastal Regions (128 Facilities)

The five coastal regions (California, North Atlantic, Mid-Atlantic, South Atlantic, and Gulf of Mexico) were designed to overlap (to the extent possible) with those NOAA NMFS regional fishery management councils within which facilities subject to the final 316(b) were identified. No facilities known to be subject to the rule were identified in the Pacific Northwest or Alaska. These coastal regions include regulated facilities that withdraw cooling water from estuaries, tidal rivers, and marine waters within the NMFS regions. All other facilities that withdraw cooling water from non-coastal waterbodies, such as lakes (excluding the Great Lakes), rivers, and reservoirs are included in the Inland Region, regardless of geographical location or proximity to coast.

Coastal regions are defined as follows: the California region includes all estuary/tidal river and ocean manufacturing facilities in California (no regulated facilities are located in Oregon or Washington state; all regulated facilities in these states occur on bodies of fresh water), plus four facilities in Hawaii. Although distant from California geographically, oceanographically and in terms of species composition, no IM&E studies could be found from facilities in Hawaii, necessitating this grouping to avoid completely excluding Hawaiian facilities from consideration. The North Atlantic region encompasses coastal facilities in Maine, New Hampshire, Massachusetts, Rhode Island, and Connecticut. The Mid-Atlantic region includes coastal facilities in New York, New Jersey, Pennsylvania, Delaware, Maryland, the District of Columbia, and Virginia. The South Atlantic region includes coastal facilities in North Carolina, South Carolina, Georgia, and the east coast of Florida. Finally, the Gulf of Mexico region includes coastal facilities in Texas, Louisiana, Mississippi, Alabama, and the west coast of Florida. No facilities known to be in-scope of the 316b final rule were identified in Alaska, Puerto Rico, or the Pacific Islands. Overall, coastal regions included a total of 128 facilities.

Great Lakes Region (57 Facilities)

The Great Lakes region is defined in accordance with the CWA to include facilities withdrawing cooling water from Lake Superior, Lake Michigan, Lake Huron (including Lake St. Clair), Lake Erie and Lake Ontario, and the connecting waterbodies (Saint Mary's River, Saint Clair River, Detroit River, Niagara River, and Saint Lawrence River to the Canadian border) (Great Lakes 1990). It excludes facilities in the state of New York that withdraw cooling water from any of these waterbodies that have DIF greater than or equal to 20 MGD due to state regulation of these facilities. The Great Lakes region includes of 57 facilities.

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Inland Region (620 Facilities)

The Inland region is a geographically diverse area that includes all regulated facilities that withdraw water from all inland waterbodies (excluding those included within the Great Lakes Region) regardless of geographical location. There are 620 such facilities in 39 states (including those states with both coastal and inland region facilities).

2.3 Ecosystems Located Within the Proposed Action Area

The proposed action will affect waterbodies that provide cooling water or which receive discharges from facilities and the aquatic ecosystems and biota within these waterbodies. Accordingly, the focus of the BE is on the potential effects to aquatic T&E species and their designated critical habitats. However, there are also potential indirect effects to terrestrial and semi-aquatic wildlife that feed within aquatic ecosystems and/or use riparian or wetland habitats for nesting. Accordingly, semi-aquatic, and terrestrial species T&E were also considered for potential direct and indirect effects of the proposed action.

Aquatic ecosystems are dynamic in nature, consisting of interdependent relationships among the physical, chemical, and biological components of the system. Given the complexity and spatial and temporal variability of aquatic ecosystems, it is useful to delineate boundaries when defining baseline conditions. For purposes of the Biological Evaluation, aquatic ecosystems were divided into three major categories (marine, estuarine, and freshwater) based on ecological, physical, water quality, and geographic characteristics. We also discuss the major habitats found within these ecosystems below. CWIS are likely to have impacts, either direct or indirect, on these habitats.

Marine Ecosystems

Marine ecosystems are aquatic habitats characterized by salinity levels near or above 32 parts per thousand (ppt). The marine ecosystems located in the 316(b) Coastal Region generally lie within the CWA territorial sea, which extends 3 nautical miles from the shoreline. These ecosystems are exposed to the waves and currents of the open ocean, and include sandy beaches, shallow coastal bays (that lack freshwater inflow), and exposed rocky coasts that provide little or no shelter from wind and waves. Some of the important habitats within marine ecosystems that may be affected by CWIS operations include the intertidal, subtidal, and pelagic zones.

Intertidal Zone

The intertidal zone is the area where the ocean meets the shoreline, between the upper reaches of water at high tide and the lower reaches of water at low tide. Wave and tidal action contribute to a wide array of environmental factors that make the intertidal zone a physically challenging place for its inhabitants, and determine the geographic limits of its species. The upper intertidal zone, which is exposed to air for much of the day, is typically occupied by few species, whereas the lower intertidal zone, usually submerged during both high and low tide, is populated by many organisms.

Organisms typically found in rocky or unvegetated upper intertidal zones include macroalgae, lichen, snails, limpets, crabs, barnacles, mussels and other invertebrates. Sandy shores are a common feature throughout United States coastlines. Primary producers are limited to benthic diatoms and free-

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floating phytoplankton. Because there can be little primary production, infaunal and epifaunal animals must rely on food from phytoplankton, organic debris, or other animals.¹⁵

The middle intertidal zone contains an abundance of barnacles as well as their primary predator, whelks. Mussels, sea stars, and spiny lobsters thrive in the intertidal zone.

A large variety of species inhabit the lower intertidal zone, partially because it is a more constant environment. This zone is not as frequently exposed to harsh changing conditions and remains submerged for the majority of the tidal cycle. Sea stars, snails, and worms are a few of the invertebrates that may inhabit this zone along with clams, sea anemones, sea urchins, and octopuses. Because this region is almost constantly submerged, many types of fish feed here and use sea grass beds as shelter for their eggs and larvae.

Subtidal Zone

Marine subtidal environments contain the organisms living on the substrate and within the sediments of the coastal sea floor or in the waters above. Representatives of four major taxonomic groups found in the subtidal zone include of various infaunal and epifaunal organisms: polychaetes, crustaceans, echinoderms, and mollusks. Epifaunal organisms (e.g., anemones, sea urchins, sea stars) dominate rocky bottoms, while infaunal organisms (e.g., polychaetes, clams, worms) dominate soft bottoms. Diatoms (phytoplankton), sea grasses, and detritus from nearby algae beds can provide food as well as some habitat in soft-bottomed subtidal environments.

In subtidal benthic areas where vegetation can be abundant, sea grass beds and kelp forests can dominate the aquatic plant communities. In particular, sea grass beds have high productivity and provide a large portion of the total primary production of inshore waters. The beds provide important habitat for large numbers of species, including burrowers and motile animals (such as crabs and scallops). Furthermore, birds, fish, sea urchins, and sea turtles use sea grass beds to escape predation and to graze.

Pelagic Zone

The pelagic zone is the open water directly adjacent to the shore and above the benthic region. The lowest trophic level of the water column consists of thousands of species of bacteria and plankton. The distribution of plankton in United States marine waters is highest off the continental shelf and in temperate inshore waters, which span both the east and west coastlines. Planktonic organisms are divided into two primary types: phytoplankton and zooplankton. Phytoplankton species are responsible for most of the photosynthetic activity in the oceans. Zooplankton, which are heterotrophic planktonic animals, include a variety of species that mainly feed on other zooplankton and phytoplankton.

Small marine animals feeding directly upon plankton in the water column comprise the intermediate links in the marine food web and include free-swimming invertebrates such as jellyfish and small pelagic fish. In turn, these small animals provide prey to larger marine animals such as fish, seabirds, sea turtles, and marine mammals.

¹⁵ Infaunal organisms live *within* the bottom substrate (e.g., sand, mud) of a body of water. Epifaunal organisms live *on* the surface of the bottom substrate of a body of water.

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Estuarine Ecosystems

Estuarine ecosystems are habitats where fresh and marine waters mix (e.g., where a river or stream meets the ocean). The unique physical and chemical characteristics of estuaries are influenced by the tides and the mixing of fresh and seawater. The numerous estuarine habitats of the United States are well distributed throughout the study regions and vary in size. This unique environment supports a variety of wildlife and fisheries, which contribute substantially to the economy of the United States (USEPA 2005).

Estuaries usually have greater variability in temperature and salinity than marine waters. As a result, estuarine species are characterized by their tolerance to broad fluctuations in their physical environment. The influx of freshwater, sediment, and nutrients from the land mixes with the salty oceanic waters containing additional nutrients to create a highly productive ecosystem. Thus, estuaries play a critical role as foraging grounds and nurseries for marine species, including some commercially important fish and crustaceans.

Estuarine Intertidal Zone

The estuarine intertidal zone functions as vital habitat to many organisms. These habitats can range from unvegetated cobble, gravel, sand, or mud beds (see below) to productive and emergent wetlands. Muddy shores, a part of the upper intertidal zone, have high concentrations of organic matter and lack significant wave action. They form in estuaries, bays, lagoons, and harbors. The low-slope areas are termed mud flats and are unique environments because they have two separate layers where primary production occurs: the superficial layer where diatoms, algae, and sea grasses carry on photosynthesis and a deep, oxygen depleted layer where bacteria carry on anaerobic respiration. Primary consumers on muddy shores include polychaetes, nematodes, and bivalves. These organisms are primary consumers, but unlike herbivores, they feed on bacteria and organic particles, rather than plants. In turn, they are consumed by carnivorous animals including moon snails, some crabs, fish, and birds.

Estuarine Subtidal Zone

Subtidal benthic organisms function on or within the floor of the estuary. This habitat can support a vast array of organisms, all of which play a role in the healthy functioning of the ecosystem. Diatoms and other species act as primary producers, creating their own nourishment using sunlight. Primary consumers feed on plankton, detritus, and benthic algae, while secondary consumers feed on primary consumers. The bacteria and other infaunal microorganisms act as decomposers, breaking down the waste products of organisms or feeding on dead plant or animal material. The benthic epifaunal community in a typical estuary consists of oysters, mussels, sea grasses, crabs, sea stars, ascidians and snails. Finally, an estuarine demersal community includes organisms that live or feed on the bottom of an estuary.

Pelagic Zone

The pelagic zone encompasses the areas of the estuary that are distinct from the shoreline and the floor of the estuary. Microorganisms, plankton, invertebrates, and fishes inhabit the water column. As primary producers, phytoplankton are vital to the estuarine food web structure and are consumed by zooplankton as well as higher trophic-level organisms. Zooplankton are also an important food source for the larval forms of many fish species, which use the shallow waters in estuaries for nurseries and protection.

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Estuaries serve as important breeding and nursery habitats for pelagic fish and play a vital role in many commercial and recreational fisheries. Approximately 75% of the U.S.'s commercially important fish and shellfish depend on estuaries at some stage in their life cycle (NMFS 2006). For example, anadromous species such as salmon hatch in upstream areas and migrate to the open ocean as juveniles. Smolts of anadromous species spend a few days to a few months resting, feeding, and physiologically adjusting to the salinity changes in estuarine areas between downstream migration and the open ocean.

Estuarine Wetlands and Marshes

Estuarine wetlands are defined by Mitsch and Gosselink (1986) as deepwater tidal habitats and adjacent tidal wetlands that are usually semi-enclosed by land but have open, partially obstructed, or sporadic access to the ocean and in which ocean water is at least occasionally diluted by freshwater. The salinity of estuarine wetlands can range from hyperhaline (>40 ppt) to mixohaline/brackish (0.5 – 30 ppt) to fresh (<0.5 ppt) .

Salt marshes have high biodiversity that can tolerate the extremes of salinity and temperature fluctuations and alternate drying and re-wetting . Estuarine wetlands and marshes also have high biological diversity. Depending on substrate type (e.g., rock, sand, mud) dominant fauna can range from lobster, sponge, clam, wedgeshell, scallop, shrimp, snail, mussel, periwinkle, barnacle, and crab with many of these containing numerous species. Dominant flora also varies with substrate type and can include (depending on climate) turtle grass, cord grass, spike grass, samphire, marsh elder, and mangrove (Mitsch and Gosselink, 1986).

Freshwater Ecosystems

The freshwater ecosystems are habitats characterized by low salinity, usually less than 0.5 ppt. Examples of freshwater ecosystems relevant to 316(b) issues include: rivers and streams; lakes, ponds and reservoirs and freshwater wetlands. Freshwater ecosystems make up the majority of relevant habitats in the Great Lakes and Inland regions.

River and Streams

River and stream environments consist of flowing water systems. Similar to other aquatic ecosystems, rivers can be divided into zones that differ physically and biologically. The surface of a river is the top-most zone, consisting of the area from the air-water interface down a few centimeters into the water where gases (e.g., nitrogen, oxygen, and carbon dioxide) are exchanged between the water and the atmosphere. A river also has a water column zone directly below the surface of the water, which may be very little in shallow streams and much greater in large rivers. The benthic zone of a river is located at the sediment water interface, which can consist of sediment, rocks, and other substrates.

If sufficient light is available for photosynthesis, periphyton (attached algae) are typically the main primary producers in streams. In low gradient streams, aquatic macrophytes can be an important part of the biota. Some riverine macrophytes may alter the velocity and flow of the stream, and provide microhabitats for many organisms (Dodds and Biggs 2002).

A river system's benthic community is determined by the material that makes up the bottom of the riverbed and the availability of various microhabitats, which in turn is partly controlled by the gradient and geology. Riverine benthos can range from burrowing macroinvertebrates to organisms that live on the surface of the benthic environment.

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Microhabitats in a river play a large role in determining where fish species are found. Some fish species prefer inhabiting river pools and other slower-moving areas of a river while other species thrive in the main channel. Bain and Knight (1996) found that slow moving shallow areas of a river tend to possess the highest diversity, as well as densities, of fish. Riverine fish feed on benthic macroinvertebrates and the juveniles or eggs of other fish. They form one of the highest levels in a riverine food web, and they are also an important recycler of nutrients.

Lake, Pond, and Reservoirs

Lake, pond, and some freshwater wetland environments consist of water systems that are tranquil. Similar to estuarine and marine ecosystems, lakes can be partitioned into distinct biological zones according to their physical structure. The littoral zone of a lake is closest to the shoreline and is the area where sunlight is capable of penetrating the water, allowing aquatic plants and many aquatic invertebrates and fish to thrive and contributing to the overall high productivity of the zone. A variety of amphibians, reptiles, and fish breed and live in the littoral zone. The benthic organisms (benthos) found in lakes are far more abundant and diverse in the littoral zone than in the profundal zone.

The pelagic or limnetic zone (water column) of a lake lays beyond the littoral zone, in open water where shoreline processes have less influence and where sunlight may also reach. This zone may be inhabited by many fish species including various sport fish such as centrarchids (bass, bluegill) and percids (pike, walleye).

The profundal zone lies beneath the level to which sunlight can penetrate and applies only to very deep lakes. The profundal zone is usually low in species diversity, consisting primarily of decomposers such as bacteria and fungi. Although decomposers can be found in all parts of a lake, they are the dominant organisms in the deeper zones.

Inland Wetlands and Marshes

Lacustrine (lake-associated) and palustrine (e.g. ponds, marshes, and bogs) freshwater wetlands are found throughout the Inland Region. Organisms inhabiting them include snails, midges, crayfish, mollusks, clams, fish, algae, and many vascular plants. These wetlands often contain vegetation such as alder, willow, spruce, maple, ash, oak, and cypress (Cowardin et al. 1979).

Riverine wetlands occur within a river's channel and have salinities of less than 0.5 ppt. Organisms may be adapted to the flowing water environment by having a streamlined shape and strong connections to the substrate. Organisms in these wetlands may include snails, insects, algae, mollusks, and a wide array of vascular aquatic plants (Cowardin et al. 1979). Inland marshes also include river floodplain wetlands and marshes, which are areas that experience frequent inundation of water as well as dry periods when there may still be moist areas or standing water. These areas are often a source of nutrients and organic matter to the river itself during flooded conditions and serve as temporary habitats for many macroinvertebrate, fish, and wildlife species.

2.4 T&E Species Affected by the Proposed Action

To identify T&E species potentially affected by the proposed action, EPA initially considered the complete listing of species within the U.S., territories and coastal waters, as provided by USFWS's

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Environmental Conservation Online System (ECOS)¹⁶ website and at the website of NMFS' Office of Protected Resources (OPR)¹⁷. This highly conservative approach of identifying species was predicated by the high degree of geographic uncertainty posed by the large number of facilities that are known to be, and a larger number of facilities that may be, subject to the proposed action. In the case of many facilities that may be subject to the proposed action, specific environmental settings, baseline technologies used to reduce the effects of CWIS, any prior consultation with the Services (through other permitting programs, for example) and characteristics of receiving waters are unknown.

In an effort to prevent undue regulatory review of species clearly not subject to CWIS and thus not affected by the proposed approach, a coarse screening of species was conducted. Where appropriate and documentable, T&E species were deleted from the set of all protected species based on the following factors: (1) lack of overlap between T&E habitat and the universe of regulated and potentially regulated facilities as defined at a broad, watershed-scale using the USGS 8-digit Hydrologic Unit Code (HUC-8) system; (2) confirmation of a limited, site-specific habitat (e.g., species endemic to localized springs, cave systems, mountains, etc.) well outside any possible hydraulic influence of riverine, coastal or oceanic facilities, as described and documented in ECOS, OPR or NatureServe websites (<http://www.natureserve.org/explorer/>); and (3) best professional judgment based on species' life history and ecological characteristics, including habitat preferences, trophic (feeding) preferences, and other ecological features. Using best professional judgment, EPA excluded species from further analysis when the following conditions were met:

- life history stages do not occur in, or are reliant upon, aquatic systems (e.g., reproduction, larval stages, migratory habitat, etc.), and
- aquatic species did not account for a substantial proportion of diet under any life history stage

Using this set of three criteria, many species were excluded from further analysis, including all arachnids, insects, and crustaceans. A list of excluded species is presented in Appendix Table 9-1, accompanied by the reason(s) and citations accounting for their removal from further consideration.

The list of 312 T&E species not excluded from further analysis is provided in **Table 2-2**. This list includes species with two or more distinct population segments (DPS) or evolutionarily significant units (ESUs). For the purposes of further analysis, the list was divided according to major taxonomic groups including: amphibians (5 species), birds (24 species and DPS), clams (83 species), corals (14 species), fish (130 species and DPS), mammals (20 species and DPS), reptiles (13 species), and snails (23 species).

¹⁶ The Environmental Conservation Online System (ECOS) geographical information dataset provides species information and polygon ranges for listed species in the United States and its territories. ECOS website located at http://ecos.fws.gov/tess_public/

¹⁷ <http://www.nmfs.noaa.gov/pr/laws/csa/>

Table 2-2: Generalized Responses of Major Taxonomic Groups to Environmental Stressors associated with the proposed action.

Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Amphibian	Amphibian	Ozark Hellbender	<i>Cryptobranchus alleganiensis bishopi</i>	X	X	X	X	X	X	O
Amphibian	Amphibian	California Red-Legged Frog	<i>Rana draytonii</i>	X	X	X	X	X	X	X
Amphibian	Amphibian	Desert Slender Salamander	<i>Batrachoseps aridus</i>	X	X	X	X	X	X	X
Amphibian	Amphibian	Wyoming Toad	<i>Bufo baxteri</i> (=hemiphrys)	X	X	X	X	X	X	X
Amphibian	Amphibian	Barton Springs Salamander	<i>Eurycea sosorum</i>	X	X	X	X	X	X	X
Bird	Cranes and Storks	Whooping Crane	<i>Grus americana</i>	O	O	O	O	O	X	X
Bird	Cranes and Storks	Mississippi Sandhill Crane	<i>Grus canadensis pulla</i>	O	O	O	O	O	X	O
Bird	Cranes and Storks	Wood Stork	<i>Mycteria americana</i>	O	O	O	O	O	X	O
Bird	Marine Birds	Marbled Murrelet	<i>Brachyramphus marmoratus</i>	O	O	O	O	O	X	O
Bird	Marine Birds	Hawaiian Dark-Rumped Petrel	<i>Pterodroma phaeopygia sandwichensis</i>	O	O	O	O	O	X	O
Bird	Marine Birds	Newell's Townsend's Shearwater	<i>Puffinus auricularis newelli</i>	O	O	O	O	O	X	O
Bird	Marine Birds	Least Tern	<i>Sterna antillarum</i>	O	O	O	O	O	X	O
Bird	Marine Birds	California Least Tern	<i>Sterna antillarum browni</i>	O	O	O	O	O	X	O
Bird	Marine Birds	Roseate Tern	<i>Sterna dougallii dougallii</i> : U.S. Northern Coast	O	O	O	O	O	X	O
Bird	Marine Birds	Roseate Tern	<i>Sterna dougallii dougallii</i> : Florida and Puerto Rico	O	O	O	O	O	X	O
Bird	Marine Birds	Short-Tailed Albatross	<i>Phoebastria</i> (=Diomedea) <i>albatrus</i>	O	O	O	O	O	X	O
Bird	Marine Birds	Steller's Eider	<i>Polysticta stelleri</i>	O	O	O	O	O	X	O
Bird	Other Bird	Everglade Snail Kite	<i>Rostrhamus sociabilis plumbeus</i>	O	O	O	O	O	X	O
Bird	Shorebird	Western Snowy Plover	<i>Charadrius alexandrinus nivosus</i>	O	O	O	O	O	X	X
Bird	Shorebird	Piping Plover	<i>Charadrius melodus</i> : Great Lakes	O	O	O	O	O	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Bird	Shorebird	Piping Plover	<i>Charadrius melodus: Non-Great Lakes</i>	O	O	O	O	O	X	O
Bird	Shorebird	Hawaiian Stilt	<i>Himantopus mexicanus knudseni</i>	O	O	O	O	O	X	O
Bird	Shorebird	Eskimo Curlew	<i>Numenius borealis</i>	O	O	O	O	O	X	O
Bird	Shorebird	Light-Footed Clapper Rail	<i>Rallus longirostris levipes</i>	O	O	O	O	O	X	O
Bird	Shorebird	California Clapper Rail	<i>Rallus longirostris obsoletus</i>	O	O	O	O	O	X	O
Bird	Shorebird	Yuma Clapper Rail	<i>Rallus longirostris yumanensis</i>	O	O	O	O	O	X	O
Bird	Waterfowl	Hawaiian Coot	<i>Fulica americana alai</i>	O	O	O	O	O	X	O
Bird	Waterfowl	Hawaiian Common Moorhen	<i>Gallinula chloropus sandvicensis</i>	O	O	O	O	O	X	O
Bird	Waterfowl	Hawaiian (=Koloa) Duck	<i>Anas wyvilliana</i>	O	O	O	O	O	X	O
Clams	Freshwater Mussel	Cumberland Elktote	<i>Alasmidonta atropurpurea</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Dwarf Wedgemussel	<i>Alasmidonta heterodon</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Appalachian Elktote	<i>Alasmidonta raveneliana</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Fat (Mussel) Three-Ridge	<i>Amblema neislerii</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Ouachita Rock Pocketbook	<i>Arkansia wheeleri</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Spectaclecase (Mussel)	<i>Cumberlandia monodonta</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Fanshell	<i>Cyprogenia stegaria</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Dromedary Pearlymussel	<i>Dromus dromas</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Chipola Slabshell	<i>Elliptio chipolaensis</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Altamaha Spiny mussel	<i>Elliptio spinosa</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Tar River Spiny mussel	<i>Elliptio steinstansana</i>	X	O	X	X	X	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Clams	Freshwater Mussel	Purple (Mussel) Bankclimber	<i>Elliptoideus sloatianus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Cumberlandian Combshell	<i>Epioblasma brevidens</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Oyster Mussel	<i>Epioblasma capsaeformis</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Curtis Pearlymussel	<i>Epioblasma florentina curtisii</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Yellow (Pearlymussel) Blossom	<i>Epioblasma florentina florentina</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Tan Riffleshell	<i>Epioblasma florentina walkeri</i> (= <i>E. walkeri</i>)	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Upland Combshell	<i>Epioblasma metastriata</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Purple Cat's Paw (Pearlymussel)	<i>Epioblasma obliquata obliquata</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	White (Pearlymussel) Catspaw	<i>Epioblasma obliquata perobliqua</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Southern Acornshell	<i>Epioblasma othcaloogensis</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Southern Combshell	<i>Epioblasma penita</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Green (Pearlymussel) Blossom	<i>Epioblasma torulosa gubernaculum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Northern Riffleshell	<i>Epioblasma torulosa rangiana</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Tubercled (Pearlymussel) Blossom	<i>Epioblasma torulosa torulosa</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Snuffbox Mussel	<i>Epioblasma triquetra</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Turgid (Pearlymussel) Blossom	<i>Epioblasma turgidula</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Tapered Pigtoe	<i>Fusconaia burkei</i>	X	O	X	X	X	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Clams	Freshwater Mussel	Shiny Pigtoe	<i>Fusconaia cor</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Finerayed Pigtoe	<i>Fusconaia cuneolus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Narrow Pigtoe	<i>Fusconaia escambia</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Round Ebonyshell	<i>Fusconaia rotulata</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Cracking Pearlymussel	<i>Hemistena lata</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Pink (Pearlymussel) Mucket	<i>Lampsilis abrupta</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Finelined Pocketbook	<i>Lampsilis altilis</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Higgins Eye (Pearlymussel)	<i>Lampsilis higginsii</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Orangenacre Mucket	<i>Lampsilis perovalis</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Arkansas Fatmucket	<i>Lampsilis powellii</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Arkansas Fatmucket	<i>Lampsilis streckeri</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Shinyrayed Pocketbook	<i>Lampsilis subangulata</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Alabama Lampmussel	<i>Lampsilis virescens</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Carolina Heelsplitter	<i>Lasmigona decorata</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Birdwing Pearlymussel	<i>Lemiox rimosus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Scaleshell Mussel	<i>Leptodea leptodon</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Louisiana Pearlshell	<i>Margaritifera hembeli</i>	X	O	X	X	X	X	O
Clams	Freshwater	Alabama Pearlshell	<i>Margaritifera marrianae</i>	X	O	X	X	X	X	O

CWA 316(b) Biological Evaluation

Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
	Mussel									
Clams	Freshwater Mussel	Alabama Moccasinshell	<i>Medionidus acutissimus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Coosa Moccasinshell	<i>Medionidus parvulus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Gulf Moccasinshell	<i>Medionidus penicillatus</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Ochlockonee Moccasinshell	<i>Medionidus simpsonianus</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Ring Pink (Mussel)	<i>Obovaria retusa</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Littlewing Pearlymussel	<i>Pegias fabula</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	White (Pearlymussel) Wartyback	<i>Plethobasus cicatricosus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Orangefoot (Pearlymussel) Pimpleback	<i>Plethobasus cooperianus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Sheepnose Mussel	<i>Plethobasus cyphus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Clubshell	<i>Pleurobema clava</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	James Spiny mussel	<i>Pleurobema collina</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Black Clubshell	<i>Pleurobema curtum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Southern Clubshell	<i>Pleurobema decisum</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Dark Pigtoe	<i>Pleurobema furvum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Southern Pigtoe	<i>Pleurobema georgianum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Cumberland Pigtoe	<i>Pleurobema gibberum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Georgia Pigtoe	<i>Pleurobema hanleyianum</i>	X	O	X	X	X	X	O

CWA 316(b) Biological Evaluation

Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Clams	Freshwater Mussel	Flat Pigtoe	<i>Pleurobema marshalli</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Ovate Clubshell	<i>Pleurobema perovatum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Rough Pigtoe	<i>Pleurobema plenum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Oval Pigtoe	<i>Pleurobema pyriforme</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Fuzzy Pigtoe	<i>Pleurobema strodeanum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Heavy Pigtoe	<i>Pleurobema taitianum</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Fat Pocketbook	<i>Potamilus capax</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Alabama (=Inflated) Heelsplitter	<i>Potamilus inflatus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Triangular Kidneyshell	<i>Ptychobranhus greenii</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Southern Kidneyshell	<i>Ptychobranhus jonesi</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Rough Rabbitsfoot	<i>Quadrula cylindrica strigillata</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Winged Mapleleaf	<i>Quadrula fragosa</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Cumberland (Pearlymussel) Monkeyface	<i>Quadrula intermedia</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Appalachian (Pearlymussel) Monkeyface	<i>Quadrula sparsa</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Stirrupshell	<i>Quadrula stapes</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Pale (Pearlymussel) Lilliput	<i>Toxolasma cylindrellus</i>	X	O	X	X	X	X	O
Clams	Freshwater Mussel	Choctaw Bean	<i>Villosa choctawensis</i>	X	O	X	X	X	X	O
Clams	Freshwater	Rayed Bean	<i>Villosa fabalis</i>	X	O	X	X	X	X	O

CWA 316(b) Biological Evaluation

Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
	Mussel									
Clams	Freshwater Mussel	Purple Bean	<i>Villosa perpurpurea</i>	X	O	X	X	X	X	X
Clams	Freshwater Mussel	Cumberland (Pearl) mussel	<i>Villosa trabalis</i>	X	O	X	X	X	X	O
Coral	Coral	Staghorn Coral	<i>Acropora cervicornis</i>	X	O	O	X	X	X	X
Coral	Coral	Elkhorn Coral	<i>Acropora palmata</i>	X	O	O	X	X	X	X
Coral	Coral	Blue Rice Coral	<i>Montipora flabellata</i>	X	O	O	X	X	X	O
Coral	Coral	Hawaiian Reef Coral	<i>Montipora dilatata</i>	X	O	O	X	X	X	O
Coral	Coral	Purple Rice Coral	<i>Montipora turgescens</i>	X	O	O	X	X	X	O
Coral	Coral	Ringed Rice Coral	<i>Montipora patula</i>	X	O	O	X	X	X	O
Coral	Coral	Pillar coral	<i>Dendrogyra cylindrus</i>	X	O	O	X	X	X	O
Coral	Coral	Boulder star coral	<i>Montastraea annularis</i>	X	O	O	X	X	X	O
Coral	Coral	Mountainous star coral	<i>Montastraea faveolata</i>	X	O	O	X	X	X	O
Coral	Coral	Star coral	<i>Montastraea franksii</i>	X	O	O	X	X	X	O
Coral	Coral	Rough Cactus Coral	<i>Mycetophyllia ferox</i>	X	O	O	X	X	X	O
Coral	Coral	Elliptical Star Coral	<i>Dichocoenia stokesi</i>	X	O	O	X	X	X	O
Coral	Coral	Lamarck's Sheet Coral	<i>Agaricia lamarki</i>	X	O	O	X	X	X	O
Coral	Coral	Purple Rice Coral	<i>Montipora verrilli</i>	X	O	O	X	X	X	O
Fish	Chub	Slender Chub	<i>Erimystax cahni</i>	X	X	X	X	X	X	O
Fish	Chub	Spotfin Chub	<i>Erimonax monachus</i>	X	X	X	X	X	X	O
Fish	Chub	Hutton Tui Chub	<i>Gila bicolor ssp.</i>	X	X	X	X	X	X	O
Fish	Chub	Mohave Tui Chub	<i>Gila bicolor ssp. mohavensis</i>	X	X	X	X	X	X	O
Fish	Chub	Owens Tui Chub	<i>Gila bicolor ssp. snyderi</i>	X	X	X	X	X	X	O
Fish	Chub	Humpback Chub	<i>Gila cypha</i>	X	X	X	X	X	X	O

CWA 316(b) Biological Evaluation

Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Fish	Chub	Bonytail Chub	<i>Gila elegans</i>	X	X	X	X	X	X	O
Fish	Chub	Gila Chub	<i>Gila intermedia</i>	X	X	X	X	X	X	O
Fish	Chub	Pahrnagat Roundtail Chub	<i>Gila robusta jordani</i>	X	X	X	X	X	X	O
Fish	Chub	Virgin River Chub	<i>Gila seminuda (=robusta)</i>	X	X	X	X	X	X	O
Fish	Chub	Little Colorado Spinedace	<i>Lepidomeda vittata</i>	X	X	X	X	X	X	O
Fish	Chub	White River Spinedace	<i>Lepidomeda albivallis</i>	X	X	X	X	X	X	O
Fish	Chub	Spikedace	<i>Meda fulgida</i>	X	X	X	X	X	X	O
Fish	Chub	Oregon Chub	<i>Oregonichthys crameri</i>	X	X	X	X	X	X	O
Fish	Chub	Loach Minnow	<i>Tiaroga cobitis</i>	X	X	X	X	X	X	O
Fish	Chub	Chihuahua Chub	<i>Gila nigrescens</i>	X	X	X	X	X	X	O
Fish	Chub	Yaqui Chub	<i>Gila purpurea</i>	X	X	X	X	X	X	O
Fish	Darter	Bluemask (=Jewel) Darter	<i>Etheostoma sp.</i>	X	X	X	X	X	X	O
Fish	Darter	Slackwater Darter	<i>Etheostoma boschungii</i>	X	X	X	X	X	X	O
Fish	Darter	Vermilion Darter	<i>Etheostoma chermocki</i>	X	X	X	X	X	X	O
Fish	Darter	Relict Darter	<i>Etheostoma chienense</i>	X	X	X	X	X	X	O
Fish	Darter	Etowah Darter	<i>Etheostoma etowahae</i>	X	X	X	X	X	X	O
Fish	Darter	Fountain Darter	<i>Etheostoma fonticola</i>	X	X	X	X	X	X	O
Fish	Darter	Niangua Darter	<i>Etheostoma nianguae</i>	X	X	X	X	X	X	O
Fish	Darter	Duskytail Darter	<i>Etheostoma percunum</i>	X	X	X	X	X	X	O
Fish	Darter	Rush Darter	<i>Etheostoma phytophilum</i>	X	X	X	X	X	X	O
Fish	Darter	Bayou Darter	<i>Etheostoma rubrum</i>	X	X	X	X	X	X	O
Fish	Darter	Cherokee Darter	<i>Etheostoma scotti</i>	X	X	X	X	X	X	O
Fish	Darter	Maryland Darter	<i>Etheostoma sellare</i>	X	X	X	X	X	X	O
Fish	Darter	Cumberland Darter	<i>Etheostoma susanae</i>	X	X	X	X	X	X	O
Fish	Darter	Boulder Darter	<i>Etheostoma wapiti</i>	X	X	X	X	X	X	O
Fish	Darter	Amber Darter	<i>Percina antesella</i>	X	X	X	X	X	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Fish	Darter	Goldline Darter	<i>Percina aurolineata</i>	X	X	X	X	X	X	O
Fish	Darter	Leopard Darter	<i>Percina pantherina</i>	X	X	X	X	X	X	O
Fish	Darter	Snail Darter	<i>Percina tanasi</i>	X	X	X	X	X	X	O
Fish	Darter	Yellowcheek Darter	<i>Etheostoma moorei</i>	X	X	X	X	X	X	O
Fish	Darter	Okaloosa Darter	<i>Etheostoma okaloosae</i>	X	X	X	X	X	X	O
Fish	Logperch	Conasauga Logperch	<i>Percina jenkinsi</i>	X	X	X	X	X	X	O
Fish	Logperch	Roanoke Logperch	<i>Percina rex</i>	X	X	X	X	X	X	O
Fish	Madtom	Chunky Madtom	<i>Noturus crypticus</i>	X	X	X	X	X	X	O
Fish	Madtom	Yellowfin Madtom	<i>Noturus flavipinnis</i>	X	X	X	X	X	X	O
Fish	Madtom	Neosho Madtom	<i>Noturus placidus</i>	X	X	X	X	X	X	O
Fish	Madtom	Pygmy Madtom	<i>Noturus stanauli</i>	X	X	X	X	X	X	O
Fish	Madtom	Scioto Madtom	<i>Noturus trautmani</i>	X	X	X	X	X	X	O
Fish	Madtom	Smoky Madtom	<i>Noturus baileyi</i>	X	X	X	X	X	X	O
Fish	Minnow	Rio Grande Silvery Minnow	<i>Hybognathus amarus</i>	X	X	X	X	X	X	O
Fish	Minnow	Delta Smelt	<i>Hypomesus transpacificus</i>	X	X	X	X	X	X	X
Fish	Minnow	Palezone Shiner	<i>Notropis albizonatus</i>	X	X	X	X	X	X	O
Fish	Minnow	Cahaba Shiner	<i>Notropis cahabae</i>	X	X	X	X	X	X	O
Fish	Minnow	Arkansas River Shiner	<i>Notropis girardi</i>	X	X	X	X	X	X	O
Fish	Minnow	Cape Fear Shiner	<i>Notropis mekistocholas</i>	X	X	X	X	X	X	O
Fish	Minnow	Pecos Bluntnose Shiner	<i>Notropis simus pecosensis</i>	X	X	X	X	X	X	O
Fish	Minnow	Topeka Shiner	<i>Notropis topeka (=tristis)</i>	X	X	X	X	X	X	O
Fish	Minnow	Blackside Dace	<i>Phoxinus cumberlandensis</i>	X	X	X	X	X	X	O
Fish	Minnow	Woundfin	<i>Plagopterus argentissimus</i>	X	X	X	X	X	X	O
Fish	Minnow	Gila (Incl. Yaqui) Topminnow	<i>Poeciliopsis occidentalis</i>	X	X	X	X	X	X	O

CWA 316(b) Biological Evaluation

Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Fish	Minnow	Colorado Pikeminnow (=Squawfish)	<i>Ptychocheilus lucius</i>	X	X	X	X	X	X	X
Fish	Minnow	Ash Meadows Speckled Dace	<i>Rhinichthys osculus nevadensis</i>	X	X	X	X	X	X	O
Fish	Minnow	Clover Valley Speckled Dace	<i>Rhinichthys osculus oligoporus</i>	X	X	X	X	X	X	O
Fish	Minnow	Foskett Speckled Dace	<i>Rhinichthys osculus ssp.</i>	X	X	X	X	X	X	O
Fish	Minnow	Laurel Dace	<i>Chrosomus saylori</i>	X	X	X	X	X	X	O
Fish	Minnow	Blue Shiner	<i>Cyprinella caerulea</i>	X	X	X	X	X	X	O
Fish	Minnow	Beautiful Shiner	<i>Cyprinella formosa</i>	X	X	X	X	X	X	O
Fish	Minnow	Devils River Minnow	<i>Dionda diaboli</i>	X	X	X	X	X	X	O
Fish	Other Fish	Waccamaw Silverside	<i>Menidia extensa</i>	X	X	X	X	X	X	O
Fish	Other Fish	Smalltooth Sawfish	<i>Pristis pectinata</i>	X	X	X	X	X	X	O
Fish	Other Fish	Tidewater Goby	<i>Eucyclogobius newberryi</i>	X	X	X	X	X	X	O
Fish	Other Fish	Pecos Gambusia	<i>Gambusia nobilis</i>	X	X	X	X	X	X	O
Fish	Other Fish	San Marcos Gambusia	<i>Gambusia georgei</i>	X	X	X	X	X	X	O
Fish	Other Fish	Clear Creek Gambusia	<i>Gambusia heterochir</i>	X	X	X	X	X	X	O
Fish	Other Fish	Unarmored Threespine Stickleback	<i>Gasterosteus aculeatus williamsoni</i>	X	X	X	X	X	X	O
Fish	Other fish	Pacific Eulachon	<i>Thaleichthys pacificus</i>	X	X	X	X	X	X	O
Fish	Pacific Salmonid	Chum Salmon	<i>Oncorhynchus (=Salmo) keta: Columbia River</i>	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chum Salmon	<i>Oncorhynchus (=Salmo) keta: Hood Canal summer-run</i>	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Coho Salmon	<i>Oncorhynchus (=Salmo) kisutch: Central California coast</i>	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Coho Salmon	<i>Oncorhynchus (=Salmo) kisutch: Lower Columbia River</i>	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Coho Salmon	<i>Oncorhynchus (=Salmo) kisutch: Oregon coast</i>	X	X	X	X	X	X	X

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				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Fish	Pacific Salmonid	Coho Salmon	<i>Oncorhynchus</i> (=Salmo) <i>kisutch</i> : Southern Oregon & Northern California coasts	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Puget Sound	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Central California coast	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Snake River Basin	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Upper Columbia River	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Southern California	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Middle Columbia River	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Lower Columbia River	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Upper Willamette River	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : Northern California	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Steelhead	<i>Oncorhynchus</i> (=Salmo) <i>mykiss</i> : South-Central California Coast	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Sockeye Salmon	<i>Oncorhynchus</i> (=Salmo) <i>nerka</i> : Ozette Lake	X	X	X	X	X	X	O
Fish	Pacific Salmonid	Sockeye Salmon	<i>Oncorhynchus</i> (=Salmo) <i>nerka</i> : Snake River	X	X	X	X	X	X	O
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : California coastal	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Central Valley spring-run	X	X	X	X	X	X	X

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Lower Columbia River	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Upper Columbia River spring-run	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Puget Sound	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Sacramento River winter-run	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Snake River fall-run	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Snake River spring/summer-run	X	X	X	X	X	X	X
Fish	Pacific Salmonid	Chinook Salmon	<i>Oncorhynchus</i> (=Salmo) <i>tshawytscha</i> : Upper Willamette River	X	X	X	X	X	X	X
Fish	Pupfish	Desert Pupfish	<i>Cyprinodon macularius</i>	X	X	X	X	X	X	O
Fish	Pupfish	Warm Springs Pupfish	<i>Cyprinodon nevadensis pectoralis</i>	X	X	X	X	X	X	O
Fish	Pupfish	Leon Springs Pupfish	<i>Cyprinodon bovinus</i>	X	X	X	X	X	X	O
Fish	Pupfish	Comanche Springs Pupfish	<i>Cyprinodon elegans</i>	X	X	X	X	X	X	O
Fish	Pupfish	Owens Pupfish	<i>Cyprinodon radiosus</i>	X	X	X	X	X	X	O
Fish	Rockfish	Bocaccio	<i>Sebastes paucispinis</i>	X	X	X	X	X	X	O
Fish	Rockfish	Canary Rockfish	<i>Sebastes pinniger</i>	X	X	X	X	X	X	O
Fish	Rockfish	Yelloweye Rockfish	<i>Sebastes ruberrimus</i>	X	X	X	X	X	X	O
Fish	Salmonid	Atlantic Salmon	<i>Salmo salar</i>	X	X	X	X	X	X	O
Fish	Sturgeon	Shortnose Sturgeon	<i>Acipenser brevirostrum</i>	X	X	X	X	X	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Fish	Sturgeon	North American Green Sturgeon	<i>Acipenser medirostris</i>	X	X	X	X	X	X	O
Fish	Sturgeon	Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>	X	X	X	X	X	X	X
Fish	Sturgeon	Atlantic Sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	X	X	X	X	X	X	X
Fish	Sturgeon	White Sturgeon	<i>Acipenser transmontanus</i>	X	X	X	X	X	X	O
Fish	Sturgeon	Pallid Sturgeon	<i>Scaphirhynchus albus</i>	X	X	X	X	X	X	O
Fish	Sturgeon	Shovelnose Sturgeon	<i>Scaphirhynchus platyrhynchus</i>	X	X	X	X	X	X	O
Fish	Sturgeon	Alabama Sturgeon	<i>Scaphirhynchus suttkusi</i>	X	X	X	X	X	X	X
Fish	Sucker	Razorback Sucker	<i>Xyrauchen texanus</i>	X	X	X	X	X	X	X
Fish	Sucker	Santa Ana Sucker	<i>Catostomus santaanae</i>	X	X	X	X	X	X	O
Fish	Sucker	June Sucker	<i>Chasmistes liorus</i>	X	X	X	X	X	X	O
Fish	Sucker	Modoc Sucker	<i>Catostomus microps</i>	X	X	X	X	X	X	O
Fish	Sucker	Warner Sucker	<i>Catostomus warnerensis</i>	X	X	X	X	X	X	O
Fish	Sucker	Shortnose Sucker	<i>Chasmistes brevirostris</i>	X	X	X	X	X	X	O
Fish	Sucker	Lost River Sucker	<i>Deltistes luxatus</i>	X	X	X	X	X	X	O
Fish	Sucker	Cui-Ui	<i>Chasmistes cujus</i>	X	X	X	X	X	X	O
Fish	Trout	Little Kern Golden Trout	<i>Oncorhynchus aguabonita whitei</i>	X	X	X	X	X	X	O
Fish	Trout	Greenback Cutthroat Trout	<i>Oncorhynchus clarki stomias</i>	X	X	X	X	X	X	O
Fish	Trout	Lahontan Cutthroat Trout	<i>Oncorhynchus clarkii henshawi</i>	X	X	X	X	X	X	O
Fish	Trout	Paiute Cutthroat Trout	<i>Oncorhynchus clarkii seleniris</i>	X	X	X	X	X	X	O
Fish	Trout	Bull Trout	<i>Salvelinus confluentus</i>	X	X	X	X	X	X	X
Fish	Trout	Apache Trout	<i>Oncorhynchus apache</i>	X	X	X	X	X	X	X
Fish	Trout	Gila Trout	<i>Oncorhynchus gilae</i>	X	X	X	X	X	X	X
Mammal	Baleen whale	Sei Whale	<i>Balaenoptera borealis</i>	O	O	O	O	O	X	O
Mammal	Baleen whale	Blue Whale	<i>Balaenoptera musculus</i>	O	O	O	O	O	X	O
Mammal	Baleen whale	Finback Whale	<i>Balaenoptera physalus</i>	O	O	O	O	O	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Mammal	Baleen whale	Bowhead Whale	<i>Balaena mysticetus</i>	O	O	O	O	O	X	O
Mammal	Baleen whale	North Pacific Right Whale	<i>Eubalaena japonica</i>	O	O	O	O	O	X	O
Mammal	Baleen whale	North Atlantic Right Whale	<i>Eubalaena glacialis</i>	O	O	O	O	O	X	O
Mammal	Baleen whale	Humpback Whale	<i>Megaptera novaeangliae</i>	O	O	O	O	O	X	O
Mammal	Sea Otter	Southern Sea Otter	<i>Enhydra lutris nereis</i>	O	X	O	O	O	X	O
Mammal	Manatee	West Indian Manatee	<i>Trichechus manatus</i>	O	O	O	X	O	X	X
Mammal	Sea Otter	Northern Sea Otter	<i>Enhydra lutris kenyoni</i>	O	X	O	O	O	X	O
Mammal	Pinniped	Steller Sea-Lion	<i>Eumetopias jubatus: Western population</i>	O	X	O	O	O	X	O
Mammal	Pinniped	Steller Sea-Lion	<i>Eumetopias jubatus: All except Western population</i>	O	X	O	O	O	X	O
Mammal	Pinniped	Spotted Seal	<i>Phoca largha</i>	O	X	O	O	O	X	O
Mammal	Pinniped	Guadalupe Fur Seal	<i>Arctocephalus townsendi</i>	O	X	O	O	O	X	O
Mammal	Terrestrial	Lower Keys Marsh Rabbit	<i>Sylvilagus palustris hefneri</i>	O	O	O	O	O	X	O
Mammal	Terrestrial	Grizzly Bear	<i>Ursus arctos horribilis</i>	O	O	O	O	O	X	O
Mammal	Terrestrial	Ocelot	<i>Leopardus (=Felis) pardalis</i>	O	O	O	O	O	X	O
Mammal	Terrestrial	Polar Bear	<i>Ursus maritimus</i>	O	O	O	O	O	X	O
Mammal	Toothed Whale	Killer Whale	<i>Orcinus orca</i>	O	O	O	O	O	X	O
Mammal	Toothed whale	Sperm Whale	<i>Physeter catodon (=macrocephalus)</i>	O	O	O	O	O	X	O
Reptile	Marine turtle	Loggerhead Sea Turtle	<i>Caretta caretta: Pacific Ocean</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Loggerhead Sea Turtle	<i>Caretta caretta: Atlantic Ocean</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Green Sea Turtle	<i>Chelonia mydas: Florida</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Green Sea Turtle	<i>Chelonia mydas: Everywhere except Florida</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Leatherback Sea Turtle	<i>Dermochelys coriacea</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>	X	X	O	O	O	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Reptile	Marine turtle	Yellow-Blotched Map Turtle	<i>Graptemys flavimaculata</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>	X	X	O	O	O	X	O
Reptile	Marine turtle	Olive Ridley Sea Turtle	<i>Lepidochelys olivacea</i>	X	X	O	O	O	X	O
Reptile	Other reptile	American Crocodile	<i>Crocodylus acutus</i>	O	O	O	X	O	X	O
Reptile	Other reptile	Alabama Red-Belly Turtle	<i>Pseudemys alabamensis</i>	X	X	O	X	X	X	O
Reptile	Other reptile	Coachella Valley Fringe-Toed Lizard	<i>Uma inornata</i>	X	X	O	X	X	X	O
Reptile	Other reptile	Island Night Lizard	<i>Xantusia riversiana</i>	X	X	O	X	X	X	O
Snail	Abalone	Black Abalone	<i>Haliotis cracherodii</i>	X	O	O	X	X	X	O
Snail	Abalone	White Abalone	<i>Haliotis sorenseni</i>	X	O	O	X	X	X	O
Snail	Freshwater Snail	Rough Hornsnail	<i>Pleurocera foremani</i>	O	O	X	X	X	X	X
Snail	Freshwater Snail	Pecos Assiminea Snail	<i>Assiminea pecos</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Anthony's Riversnail	<i>Athearnia anthonyi</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Slender Campeloma	<i>Campeloma decampi</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Lacy (Snail) Elimia	<i>Elimia crenatella</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Newcomb's Snail	<i>Erinna newcombi</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Koster's Springsnail	<i>Jurnia kosteri</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Round Rocksnail	<i>Leptoxis ampla</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Interrupted (=Georgia) Rocksnail	<i>Leptoxis foremani</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Plicate Rocksnail	<i>Leptoxis plicata</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Painted Rocksnail	<i>Leptoxis taeniata</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Flat Pebblesnail	<i>Lepyrium showalteri</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Cylindrical (Snail) Lioplax	<i>Lioplax cyclostomaformis</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Snake River Physa Snail	<i>Physa natricina</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	San Bernardino Springsnail	<i>Pyrgulopsis bernardina</i>	O	O	X	X	X	X	O

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Major Taxonomic Groupings	Secondary Subdivision (Guild)	Potentially Affected T&E Species - Common Name	Potentially Affected T&E Species - Scientific Name	Major Stressors Associated with Proposed Action						
				Entrainment Mortality	Impingement Mortality	Flow Alterations	Thermal Discharge	Chemical Discharge	Indirect Effects	Critical Habitat Alteration
Snail	Freshwater Snail	Socorro Springsnail	<i>Pyrgulopsis neomexicana</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Three Forks Springsnail	<i>Pyrgulopsis trivialis</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Alamosa Springsnail	<i>Tryonia alamosae</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Bliss Rapids Snail	<i>Taylorconcha serpenticola</i>	O	O	X	X	X	X	O
Snail	Freshwater Snail	Tulotoma Snail	<i>Tulotoma magnifica</i>	O	O	X	X	X	X	O
Plant	Sea Grass	Johnson seagrass	<i>Halophila johnsoni</i>	O	O	X	X	X	X	O
Key:		O = no potential effect X = potential effect								
		Bolded species have documented IM&E loss (either quantitative or qualitative)								

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A detailed evaluation of each of the potential effects of facilities subject to the proposed action is not possible. This is because, driven by vast uncertainty in the universe of regulated facilities, a lack of baseline source water biological characterization data, and a dearth of IM&E monitoring data, the scope and magnitude of potential and actual effects is unknown for virtually all species and DPS. Using the best data currently available, and basing potential effects upon ecological theory, best professional judgement, and data available from ECOS and NMFS OPR, EPA conducted a qualitative assessment of the potential effects arising from the proposed action to species¹⁸ identified in **Table 2-2**. These effects were divided into direct and indirect effects.

Figure 2-1 provides a graphical conceptual model of potential CWIS and facility discharge impacts on T&E species (an aquatic T&E species with several life history stages is assumed to ensure all potential impacts are highlighted). Facility impacts are divided between those principally associated with the CWIS, including impingement, entrainment, and flow alteration, and those associated with the discharge of cooling water, including flow alteration, thermal discharge, and chemical discharge. Entrainment is assumed to affect vulnerable early life stages of organisms, while impingement affects juvenile stages (e.g., young-of-year) and adults. The physiochemical influences of flow alteration, thermal discharge, and chemical discharge may alter the receiving water aquatic habitat and affect all life stages of the T&E organism, as well as have secondary effects on upper trophic predators (e.g., by reduction in prey) or other species which compete for resources with the T&E species (e.g., spawning habitat loss from flow reduction).

EPA recognizes that **Figure 2-1** inadequately conveys the full complexity and potential interactions between CWIS and affected aquatic biota (including changes to habitat characteristics, and other indirect effects and trophic cascades). It focuses, however, on the direct and indirect effects from CWIS that have been previously identified as having the potential to have significant effects on T&E species and aquatic communities (USEPA – EEBA citation). For a more complete identification of potential factors (mostly anthropogenic) see Table 4-1.

Indirect effects of facilities, such as physiochemical changes in aquatic habitat, changes in biological communities and/or ecosystem functions, could potentially affect many aquatic or aquatic-dependent species. The exact nature and magnitude of these indirect effects would be species-specific based on the relative size and amount of overlap of habitat with facility and CWIS locations, dependence of affected prey populations, life cycle considerations, and many other factors. Given the lack of direct data available to EPA, indirect effects are difficult if not impossible to measure quantitatively. Accordingly, given the lack of data available, EPA did not attempt to estimate the relative magnitude or probability of these indirect effects on a species-specific scale, but instead acknowledges that these indirect effects are likely to occur, and may play a role when the effects of each are summed, or when T&E species live in areas with a high density of regulated facilities.

Table 2-2 provides a summary of the effects of the proposed action on each T&E species potentially affected by regulated facilities. Due to the qualitative nature of data, responses are binary: a species is deemed to be either affected (denoted by a “X”) or not affected (denoted by an “O”) by the factors

¹⁸ For convenience, from this point forward the term “species” will be used as a collective term for both species and DPSs and ESUs.

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shown. Brief summaries of the effects of the proposed action on broad taxonomic groups, a more specific secondary taxonomic division or “guild” and/or representative species are provided below.

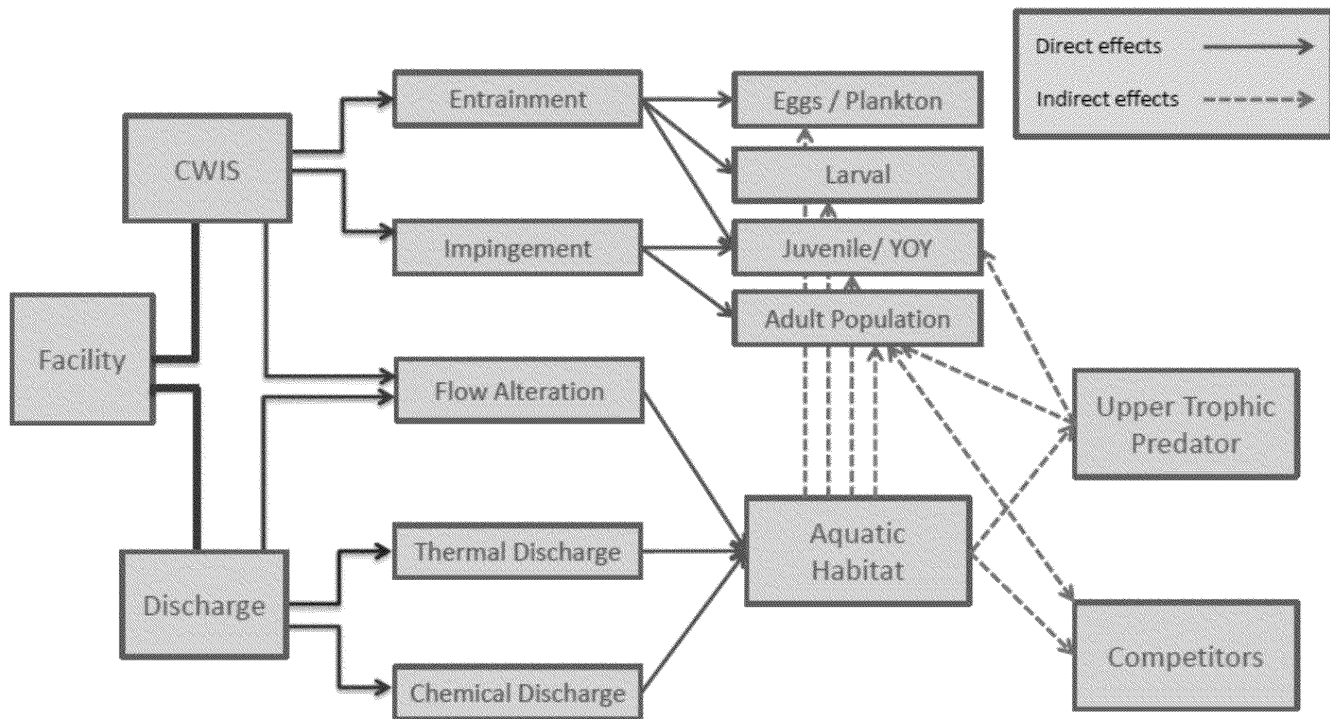


Figure 2-1. Conceptual model of potential direct and indirect CWIS and discharge effects on T&E species and aquatic habitats.

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2.4.1 Amphibians

EPA reviewed and refined the list of T&E amphibian species using the screening factors described in Section 2.4. Although generally (but not exclusively) aquatic-dependent in their need for reproductive habitat, the majority of listed amphibians breed in shallow vernal pools or within forested habitat. Therefore, the majority of listed amphibians were excluded from further consideration. Following screening, five amphibian species potentially affected by the proposed action (**Table 2-2**) were identified. included two amphibian species: California red-legged frog and Ozark hellbender. Since the Ozark hellbender has an essentially aquatic existence, the species is more likely to impacted than the other species identified, which spends much of their time in damp thickets, marshes, and forests. The potential direct and indirect impact of the proposed action on this species is qualitatively assessed below.

Hellbender eggs are brooded in close proximity in guarded nests adjacent to shoreline in slow moving streams and river. Based on this reproductive trait, entrainment impacts are unlikely, but cannot be excluded from consideration. Hellbenders are relatively poor swimmers and general prefer quiet waters. Thus, a juvenile or adult hellbender could be impinged if present in the locality of a CWIS. Living in small streams with little thermal buffering or chemical dilution possible, both thermal and chemical discharges could affect the species. For example, the Ozark hellbender does not flourish in waters which exceed 20°C, so the potential for a thermal discharge to increase ambient water temperature to unacceptable levels is possible. Similarly, flow alteration could significantly change the habitat and substrate suitability for the species. As indicated above, we do not fully understand all the potential interactions that a CWIS could produce for an amphibian species. However, given the hellbender's varied diet, it was assumed that indirect trophic effects could be possible.

2.4.2 Birds

EPA reviewed and refined the list of potentially affected T&E bird species using the screening factors described in Section 2.4. Following screening, the list of species potentially affected (**Table 2-2**) was further refined into "guilds" of cranes and storks, marine seabirds, shorebirds, waterfowl, and other birds.

Due to their terrestrial nesting and brooding habits, it was judged that most bird species would be unaffected by entrainment and impingement. Similarly, due to their size, mobility and habitat range areas, they are unlikely to be directly affected by the localized alteration of flow, ambient temperature, or water quality found near CWIS (which are commonly submerged). What could not be ruled out, however, is the potential indirect effect of the proposed action to affect the general aquatic habitat, including effects on prey species (fish, clams, snails) that T&E birds may depend on. Accordingly all listed T&E birds species were assumed to be potentially affected by indirect effects. EPA considered the nature of these indirect effects on the avian guilds particularly in terms of impacts to potential prey items. The species habitat descriptions and diet information provided below were primarily taken from relevant entries from the U.S. FWS ECOS, NOAA Office of Protected

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Resources, the USGS Non-indigenous Aquatic Species (NAS), and NatureServe websites¹⁹ and standard fishery identification manuals (Lee et al., 1980).

Cranes and Storks

The Whooping and Mississippi Sandhill Cranes and the Wood Stork are large birds with long necks, beaks and legs. The Whooping Crane is migratory between nesting grounds in prairie pothole regions in Canada and overwintering in the Southeast U.S. including Texas. Whooping Cranes are omnivorous their diet includes insects, frogs, rodents, small birds, minnows and berries and grain, when available. The Mississippi Sandhill Crane is non-migratory and largely confined to a small savannah region in Mississippi. Its prey items include aquatic invertebrates, reptiles, amphibians, insect and aquatic plants. The Wood Stork is found primarily in wetland areas in the Southeast U.S. with the majority of nesting sites in the Everglades. Wood Storks eat small fish, especially topminnows and sunfish, by foraging in shallow water.

Indirect effects of the proposal action of cranes and storks could include reduction in prey items, primarily small fish, amphibians, frogs and other food items. Currently, EPA does not have sufficient data to evaluate whether these species have been affected by existing CWIS and associated discharges.

Marine Birds

This category covers a wide variety of marine birds including terns, petrels, shearwater and murrelet. These species feed in coastal zones and marine waters. The diet of marine birds typically include small fishes, crustaceans (mysids, euphausiids), mollusks and other items.

Indirect effects of the proposed action on these species could include reduction in aquatic prey items, including marine and estuarine fish, crustaceans, mollusks, and other food items. Currently, EPA does not have sufficient data to evaluate whether these species have been affected by existing CWIS and associated discharges.

Shorebirds

Several T&E shorebird species were identified as potentially affected species. These species include plovers (Western snowy, two PDUs of piping plover), rails (light-footed rail, California Clapper Rail, Yuma Clapper Rail), Hawaiian Stilt and Eskimo Curlew. Shorebirds are small to medium-sized birds that take advantage of a variety of aquatic habitats for migration, feeding and nesting. This category includes species adapted to feeding in marine coastal and freshwater environments (shoreline, tidal marshes, and freshwater wetlands). Depending on the species, foraging occurs at different water depths based on the length of their legs and there is diversity in food items probed for in water and sediments based on the length and shape of their bills.

Indirect effects of the proposed action on shorebirds could include reduction in aquatic prey items, including crabs, crustaceans, small fish, amphibians, frogs and insect life. Currently, EPA does not have sufficient data to evaluate whether these species have been affected by existing CWIS and associated discharges.

¹⁹ Websites visited included: <http://www.fws.gov/endangered/> ; <http://www.fws.gov/pacificislands/index.html>; <http://www.nmfs.noaa.gov/pr/species/>; <http://nas.er.usgs.gov/default.aspx>; and <http://www.natureserve.org/explorer/servlet/NatureServe>

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Waterfowl

For this analysis, the three waterfowl identified included the Hawaiian coot and Hawaiian common moorhen and Hawaiian Duck. Hawaiian coot are found in fresh and brackish-water marshes and ponds on most Hawaiian islands. Their diet consists of seeds and leaves of aquatic plants, insects, tadpoles, and small fish. Moorhens are restricted to the Hawaiian islands of O‘ahu and Kaua‘i. These highly secretive birds are found in freshwater marshes, taro patches, irrigation ditches, reservoirs, and wet pastures. They favor dense emergent vegetation near open water, floating or barely emergent mats of vegetation, water depths of less than 3 feet (1 meter), and prefer fresh water as opposed to saline or brackish water. Their diet consists of mollusks, insects, water plants, and grasses.

Indirect effects of the proposed action on these species could include reduction in aquatic prey items, including mollusks, small fish, amphibians, frogs aquatic plants, and insect life. Currently, EPA does not have sufficient data to evaluate whether these species have been affected by existing CWIS and associated discharges.

Other Birds

This category includes the Everglade Snail Kite, a small raptor confined to the central Everglades and distinguished by its dependence on a diet almost exclusively of freshwater apple snails (*Pomacea paludosa*).

Indirect effects of the proposed action on this species could include reduction in the freshwater apple snail. Currently, EPA does not have sufficient data to evaluate whether these species have been affected by existing CWIS and associated discharges.

2.4.3 Clams

EPA reviewed the list of potentially affected T&E bivalve or clam species. Due to the uncertainty of the location of waterbodies and biotic communities that might be affected by the proposed action as well as the many vulnerable life stages (gametes, veliger stage) and need for facultative or obligate fish host species, no clam species were excluded from consideration. The list of potentially affected species (**Table 2-2**) included 83 species of clams, consisting exclusively of freshwater mussels.

Freshwater mussels are among the most imperiled of all large taxonomic groups. Of the 297 recognized mussel taxa reviewed by the American Fisheries Society’s Freshwater Mussels Subcommittee in 1993, 213 (71.7%) were classified as T&E including: 21 species endangered and possibly extinct (7.1%), 77 species endangered (20.6%), 43 species threatened (14.5%) and 72 species of special concern (24.2%) (Williams et al. 1993). The primary factor for the high number of at risk mussel species is habitat degradation and destruction. Notably, due to the highly specific and parasitic nature of freshwater mussel life history, anthropogenic impacts on host fish species are equivalent to further habitat destruction. Given high rates of imperilment for native freshwater fish (see Section 2.4.5); it is likely that many freshwater mussel host species are likely to be threatened. A second significant factor contributing to the imperilment of mussel species includes the invasion of nonindigenous species, specifically the Asiatic clam (*Corbicula flumina*) and zebra mussel (*Dreissena polymorpha*) (Williams et al. 1993).

A more recent summary of the conservation status of freshwater mussels expands the number of recognized North American mussel species to 311 (NatureServe 2012). Of these species, 31 are potentially extinct (10%) with a further 178 species at risk (57%). Thus, the percentage of T&E

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mussels does not appear to have changed substantially between 1993 (71.7%) and 2011 (67%), despite gains in recognized taxonomic diversity, and the protection of several species under the ESA.

Overall, freshwater mussels are likely to be particularly vulnerable to the effects regulated facility CWIS and discharge due to (1) their presence in large river ecosystems more likely to support one or more large power plants and substantial CWIS intake flows; (2) entrainment of mussel gametes or veliger stages; (3) increased biological competition from nonindigenous invaders such as the Asiatic clam or zebra mussel; and (4) dependence on host fish species for important life cycle functions that may also be adversely affected by CWIS function (hydrologic flow changes) and IM & EM.

There is a high potential for entrainment of vulnerable life stages, but little change for impingement due to the sessile nature of the adults. There is a high likelihood that entrainment losses are not reported due to the difficulty of identification of gametes or veliger stage specimens. In addition, changes in flow, temperature, and water quality, as well as indirect effects (e.g., increase habitat for invasive species) can occur.

Given the high potential for effects due to entrainment, changes in flow, temperature, and water quality, as well as indirect effects (e.g., increase habitat for invasive species), all freshwater mussel species have the potential to be affected by all impact categories (**Table 2-2**). Currently, however, EPA does not have sufficient data to evaluate to what extent these species have been affected by existing CWIS and associated discharges.

2.4.4 Corals

A total of 2 T&E coral species, and 12 proposed coral species were identified to occur within the vicinity of regulated 316(b) facilities. The two species currently listed are Caribbean species, the Elkhorn and Staghorn corals. Elkhorn coral is a large, branching coral with thick and sturdy antler-like branches that was formerly the dominant species in shallow water (3 ft-16 ft (1-5 m) deep) throughout the Caribbean and on the Florida Reef Tract, forming extensive, densely aggregated thickets (stands) in areas of heavy surf. Coral colonies prefer exposed reef crest and fore reef environments in depths of less than 20 feet (6 m), although isolated corals may occur to depths of 65 feet (20 m). Staghorn coral is a stony colonial coral which occupies a depth range from 0-50 m, but typically occurs between 15-30 m on fore-reef communities, bank reefs and fringing reefs. Food for both species consists of organic byproducts of photosynthesis (i.e., embedded zooxanthellae) as well as live prey, such as small fish and zooplankton, captured using their tentacles.

Many corals reproduce asexually (propagules) and sexually via broadcast spawning of gametes into the water column. Individual colonies are both male and female (simultaneous hermaphrodites) and will typically release millions of "gametes." The resulting coral larvae (planula) live in the plankton for several days until finding a suitable area to settle.

Corals would be potentially affected by the proposed action by entrainment of larval planula but there is no risk of impingement due to their sessile nature. In addition, thermal or chemical alterations in the local environment (associated with a CWIS discharge) could impact a reef and lead to bleaching. However, since the preferred habitat of these corals is located on shallow, exposed reef areas, the copious exchange of tidal water would be expected to largely mitigate these impacts. Indirect effects on prey items could also occur.

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Currently, EPA does not have any data to evaluate whether coral species have been affected by existing CWIS and associated discharges.

2.4.5 Fish

EPA identified T&E fish species potentially affected by the proposed action (**Table 2-2**). The list includes 131 freshwater and diadromous fish species and DPS, distributed across many families and regions. Although IM&E effects on T&E fish species have been documented at a small number of facilities, there is not sufficient data to extrapolate to all facilities or to estimate population impacts of these effects. However, one specific objective of the proposed BTA is technological improvements to reduce impingement of fish. Due to the uncertainty of the location of waterbodies and biotic communities that might be affected by the proposed action as well as the many vulnerable life stages (eggs, ichthyoplanton, larval and juveniles) no fish species were removed from further consideration.

A recent review authored by the American Fisheries Society's Endangered Species Committee documented trends in the conservation status of freshwater and diadromous fish observed over the past three decades at regional and continental scales. Overall, approximately 39% of described fish species in North America are imperiled, with 700 fish taxa classified as vulnerable (230), threatened (190), or endangered (280) in addition to 61 taxa presumed extinct or functionally extirpated from nature (Jelks et al. 2008). Compared to similar historical American Fisheries Society reviews, T&E species counts increased by 98% since 1989 (Williams et al. 1989) and 179% since 1979 (Deacon et al. 1979). Despite recent conservation efforts, including the listing of several species under the Endangered Species Act (ESA), only 6% of the fish taxa assessed in 2008 had improved in status since the 1989 inventory (Jelks et al. 2008).

While some fish spend their entire lives in the riverine environment, others migrate between fresh and saltwater ecosystems. Some anadromous species will spend the majority of their lives in the ocean, only migrating up a river to spawn. For example, salmon, sturgeon, and striped bass spend their juvenile life in the river before migrating to the ocean. Conversely, catadromous fish (e.g., the American eel) spend most of their lives in freshwater and move to the ocean to spawn with the juveniles moving back to freshwater after hatching.

Several families of fish have high proportions of T&E species. Approximately 46% of carps and true minnows species (Cyprinidae) are imperiled as well as 44% of darters and perch (Percidae), 88% of sturgeons (Acipenseridae), and 100% of paddlefish (Polyodontidae). Imperilment rates for families with important sport and commercial fish species ranged from a low of 22% for sunfish (Centrarchidae) to a high of 61% for salmon (Salmonidae) (Jelks et al. 2008). Further discussion of potential effects to various species and functional guilds of fish are provided below.

Atlantic salmon

The Atlantic salmon is an anadromous fish, typically spending 2-3 years in freshwater, migrating to the ocean where it also spends 2-3 years, and then returning to its natal river system to spawn. Spawning occurs in freshwater streams, usually in gravel-bottomed riffle above or below a pool.

Atlantic salmon of U.S. origin are highly migratory, undertaking long marine migrations between their river of origin and the northwest Atlantic. Adult Atlantic salmon ascend the rivers of New England beginning in spring and continuing through the fall, with migration peaking in June. Juvenile

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salmon feed and grow in rivers for one to three years before undergoing "smoltification" and migrating to the ocean.

In the marine environment, adults eat fishes and crustaceans (euphausiids, amphipods, decapods) in salt water, but do not feed during the return to spawning grounds. Young in natal streams eat mainly aquatic insect larvae and terrestrial insects, and sometimes fish eggs.

Atlantic salmon could be potentially affected by impingement of juvenile and young-of-year (YOY) or entrainment of eggs and ichthyoplankton by CWIS near spawning areas. Young fish residing or migrating downstream and returning adult fish could be affected by flow alteration, thermal alteration, and chemical discharges in riverine habitats. Indirect effects could be caused by alteration in the availability of prey items due to CWIS operations.

Atlantic salmon were identified as a species with documented I&E impacts (see Table 3-x), although only a qualitative²⁰ assessment of loss is available. Currently, EPA does not have sufficient data to evaluate to what extent Atlantic salmon populations have been affected by environmental alterations or indirect effects of existing CWIS and associated discharges.

Chub

Chub refer to any of several small-to-medium sized freshwater fishes of the carp family (Cyprinidae) found in diverse stream and riverine habitats. Chub species include many representatives of the genus *Gila*, which are found in habitats in the Western U.S. These are typically small-to-medium size fish, whose preferred habitat is typically run and pool habitat in clear, moderately sloping hard-substrate streams and rivers. Most chubs are primarily visual feeders, taking small invertebrates from the bottom or from stream drift. Typical diets include insect nymphs, aquatic worms, crustaceans, mollusks, water mites, small fish and aquatic plants.

No T&E chub species were identified with documented I&E impacts from EPA's analysis of facility biological monitoring data. Due to the nature of their preferred habitat (streams and small rivers), a reduced possibility of interaction with facilities with major CWIS operations could be expected. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Darters and Logperch

Darters are a group of small fish adapted to living on the bottom of fast-moving streams. These adaptations included enlarged pectoral fins and a poorly-developed or absent swim bladder. Darters feed on benthic macroinvertebrates including aquatic insects, worms and snails. Darter species display a diverse set of feeding strategies that allows several species to co-exist in the same area of the stream.

Logperch are a sub-group of darters in the Percidae family native to the eastern U.S. Logperch are easily distinguished from virtually all other darters by their tiger-like coloration, and distinctive head and snout shapes. The fish inhabit clear, gravelly streams and lakes, reaching a maximum size of

²⁰ A "qualitative" impact indicates that the species was reported by name from a minimum of one facility, but on loss estimates are provided.

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about 18 centimetres (7.1 in) and a maximum age of about 3 years. Logperches have a unique foraging behavior: they flip stones on the stream bottom with their snouts to expose any prey hidden underneath. Logperches eat aquatic insects, young crayfishes, and aquatic roundworms.

No T&E darter or logperch species were identified with documented I&E impacts from EPA's analysis of facility biological monitoring data. Due to the nature of their preferred habitat (rocky streams and small rivers), a reduced possibility of interaction with facilities with major CWIS operations could be expected. Currently, EPA does not have sufficient data to evaluate species in this category have been affected by existing CWIS and associated discharges.

Madtoms

Madtoms are catfishes (order Siluriformes) of the genus *Noturus* of the family Ictaluridae. Most of the species look very similar and are difficult to identify. The more conspicuously variable attributes of these secretive fishes are features of pigmentation, which also are more difficult to quantify and often vary according to substrate and water quality. Many of the endangered species have small to tiny or fragmented ranges, and aspects of pigmentation are important diagnostic characters of each species. These fish are bottom feeders consuming insect larvae, worms, and microinvertebrates.

No madtom catfish species were identified with documented I&E impacts from EPA's analysis of facility biological monitoring data. Due to the nature of their preferred habitat (small streams and restricted habitat ranges), a reduced possibility of interaction with facilities with major CWIS operations could be expected. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Minnow

The minnow family (Cyprinidae) is the largest family of fishes in North America with over 230 species including dace, shiners, and smelt. While commonly thought to refer to any small shiny fish, some species grow to medium size. Minnows are able to occupy a wide variety of habitats as a result of their ability to feed on common plant and animal life. These habitats range from headwater bogs, swamps, and springs to rivers, ponds, and lakes. Minnows are very important resources in the aquatic community as they serve as a food source for many piscivorous fish and birds.

Two T&E minnow species have documented I&E impacts - Delta smelt and Topeka shiner (Table 3-3). Currently, however, EPA does not have sufficient data to evaluate to what extent the three impacted minnow species, as well as the other T&E minnows, have been affected by environmental alternations or indirect effects of existing CWIS and associated discharges.

Other Fish

Pacific eulachon (commonly called smelt, candlefish, or hooligan) are a small, anadromous fish from the eastern Pacific Ocean. Eulachon typically spend 3 to 5 years in saltwater before returning to freshwater to spawn from late winter through mid spring. Eulachon occur in nearshore ocean waters and to 1,000 feet (300 m) in depth, except for the brief spawning runs into their natal (birth) streams. The adults feed on plankton but only while at sea.

Smalltooth sawfish inhabit shallow coastal waters and estuaries along Florida's Atlantic and Gulf coasts. They are usually found in shallow waters very close to shore over muddy and sandy bottoms in sheltered bays, on shallow banks, and in estuaries or river mouths. Their diet includes mostly fish but also some crustaceans.

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Pecos Gambusia is a small fish found in a very limited number of lakes, springs, and sinkholes in the Pecos River system in New Mexico and Texas. It is non-indigenous and was intentionally stocked to build up fish populations and as a failed attempt at mosquito control in stock ponds. It prefers clear, vegetated habitats in springs and sinkholes. Two other closely related species - the San Marcos Gambusia and Clear Creek Gambusia also have very limited habitat ranges.

Waccamaw Silversides, also known as skipjack or glass minnow, is a small (growing to about 2.5 inches), slim, almost transparent fish with a silver lateral stripe along each side. The only known habitats are Lake Waccamaw and the upper Waccamaw River in Columbus County, North Carolina. This species is a surface-feeder and travels in schools. Food sources include zooplankton, particularly cladocerans (i.e., microcrustaceans). Silversides forage in areas of shallow, high quality clear, open water over clean, dark sand substrate with no vegetation.

Tidewater Goby is a small, elongate, grey-brown fish rarely exceeding 50 millimeters (2 inches) standard length. It is endemic to California and found primarily in waters of coastal lagoons, estuaries, and marshes. The species is benthic in nature, living at the bottom of shallow bodies of water and feeding there.

Unarmored Threespine Stickleback is small fish averaging about 2 inches long, with 3 spines in front of the dorsal fin, and a narrow caudal peduncle; no bony plates on sides. Preferred habitat is clear, slow-flowing streams with sand or mud substrate, a water temperature less than 24°C, and abundant aquatic vegetation. It also occurs in deeper pools with slow current or, in stronger currents, behind obstructions. Lack of turbidity is a requirement. Juveniles congregate in backwaters among aquatic plants. The diet is opportunistic and includes mainly insects and snails.

None of the species in this category were identified with documented I&E impacts during EPA's analysis of facility biological monitoring data. Due to the highly localized habitat for the Pecos gambusia and Waccamaw silversides, little potential impact from CWIS operation would be expected. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Pacific Salmonids

T&E Pacific salmonids of interest include five species (Chinook, Chum, Coho, Sockeye, and Steelhead) in the genus *Oncorhynchus* which are further grouped into several river or area-specific DPS. Salmon and steelhead are anadromous fish that are hatched and develop in freshwater streams and tributaries. They then migrate downstream and live in the ocean for 2 to 5 years, often migrating thousands of miles, before returning upstream to their natal streams. Steelhead may spawn more than once and, depending on environmental conditions, may switch to a non-anadromous variant (rainbow trout).

Juvenile and young salmon feed primarily on zooplankton and aquatic insects. Adults feed on aquatic and terrestrial insects, mollusks, crustaceans, fish eggs, minnows, and other small fishes (including other trout). For the various species, the marine diet is variable and can include copepod zooplankton, mollusks, tunicates, squid, and fish.

Four Pacific salmonids (Chinook, Chum, Coho, and Steelhead) were identified as species with documented I&E impacts (see Table 3-3), with either quantitative and qualitative assessments of loss available. Currently, EPA does not have sufficient data to evaluate to what extent Pacific salmonid

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species or DPS have been affected by environmental alternations or indirect effects of existing CWIS and associated discharges.

Pupfish

Pupfish are a group of small killifish belonging to the family Cyprinodontidae. All pupfish are especially noted for being found in extreme and isolated situations, especially in warm streams and springs of the western United States. Pupfish are remarkably adaptable and can survive in aquatic habitats with high temperatures and salinities, although they likely prefer waters of lower salinities and temperatures. Pupfish are predators on small aquatic organism, including insects, worms, and larger zooplankton with plants and detritus also consumed.

None of the species in this category were identified with documented I&E impacts during EPA's analysis of facility biological monitoring data. Due to the highly localized and isolated habitat for pupfish, little potential impact from CWIS operation would be expected. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Rockfish

Three Pacific coast rockfish (bocaccio, canary, yelloweye) were identified as potentially affected by CWIS operations. Rockfish are large, long-lived fish which are unusual among the bony fishes in that fertilization and embryo development is internal and female rockfish give birth to live larval young (oviviparous). Larvae may be distributed over a wide area extending several hundred miles offshore

Adults of these species occupy a large depth range with differences in preferred depth but generally tend to be found in deep water (160 ft – 800 ft) with maximum depths near 1500 ft. Juveniles and subadults may be more common than adults in shallower water, and are associated with rocky reefs, kelp canopies, and artificial structures, such as piers and oil platforms.

Larval rockfish feed on diatoms, dinoflagellates, tintinnids, and cladocerans, and juveniles consume copepods and euphausiids of all life stages. Adults eat demersal invertebrates and small fishes, including other species of rockfish, associated with kelp beds, rocky reefs, pinnacles, and sharp drop-offs.

None of the species in this category were identified with documented I&E impacts during EPA's analysis of facility biological monitoring data. Potential I&M impact from CWIS operation would more likely be associated with juveniles and sub-adults since adults are found at significant depths. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Sturgeon

There are seven T&E sturgeon species, belonging either to the genus *Acipenser* (Atlantic, green, Gulf and white) or *Scaphirhynchus* (Alabama, shovelnose or pallid). Sturgeon species are some of the largest and longest living fish found in freshwaters in North America.

Acipenser species are estuarine, anadromous fish, migrating upstream in the spring to spawn in freshwater usually over bottoms of hard clay, rubble, or gravel. They migrate back into coastal marine waters in the fall to forage and overwinter (may stay upstream in winter in some northern areas).

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Juveniles spend winter and spring mainly in river mouths. These species are notable for the length of time needed to reach sexual maturity (e.g., in some species greater than 20 years). They are bottom feeders, feeding on benthic invertebrates (e.g., worms, crustaceans, aquatic insects, snails, sand lances) and small fishes as available.

Scaphirhynchus species are non-anadromous inhabitants of large inland rivers but may migrate into smaller streams for spawning. Habitat includes the main channels and backwater areas of major rivers. They are bottom feeders with a diet including larval aquatic insects, oligochaetes, mollusks, crustaceans, fish eggs, and other fishes

Of the seven sturgeon species, six have documented I&E impacts with white sturgeon being the exception (see Table 3-3 for quantitative estimates). Currently, EPA does not have sufficient data to evaluate to what extent these species have also been affected by environmental alternations or indirect effects of existing CWIS and associated discharges.

Sucker

Three sucker species (June, Razorback and Santa Ana) are potentially affected by the proposed action. These suckers are small to medium-sized freshwater fish found in the Western U.S. in streams and large rivers. They are typically herbivore/invertivore feeders that forage and consume algae, planktonic crustaceans, and aquatic insect larvae.

No sucker species were identified with documented I&E impacts from EPA's analysis of facility biological monitoring data. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Trout

Trout are freshwater gamefish found in streams and rivers. Six trout species in the genus *Oncorhynchus* (greenback cutthroat trout, Lahontan cutthroat trout, Paiute cutthroat trout, Little Kern Golden trout, Apache trout and Gila trout) and bull trout were identified as potentially affected by the proposed action. These species are located in the Western U.S.

These species prefer clear, swift-flowing mountain streams or deep lakes with cool, well-oxygenated water. Preferred stream habitat is cover such as overhanging banks and vegetation while juveniles tend to shelter in shallow backwaters. These species feed mainly on aquatic and terrestrial insects as juveniles and on a range of food items including crustaceans, fish and frogs as adults.

None of the trout species were identified with documented I&E impacts from EPA's analysis of facility biological monitoring data. Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

For this analysis, because of their aquatic life histories and vulnerable life history stages, all fish species were considered potentially affected by all impact categories. However, because of a lack of data, quantitative estimates of fish kills are available for only a small subset of species. Furthermore, for these species, because collection data is often > 30 years old, and many facilities have installed technology to reduce fish kill at CWIS, these data are not representative of current mortality. Moreover, although a small amount of data exist that estimate mortality subsequent to impingement, EPA is unaware of any data on how injuries related to impingement affects fitness on an individual

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level. The final rule will ensure sufficient data is collected to determine take during subsequent NPDES permitting activities.

2.4.6 Mammals

EPA reviewed and refined the list of potentially affected T&E mammalian species using the screening factors described in Section 2.4. The list of potentially affected species (**Table 2-2**) included 16 mammalian species and DPS, many of which are whales or pinnipeds. The list included 12 species: eleven marine mammals including whales (blue, finback, humpback, killer, right, sei, and sperm), sea otter, spotted seal, Stellar sea lion, manatee and three terrestrial species (grizzly bear, ocelot and the lower keys' marsh rabbit).

It was generally judged that these species, due to their size, mobility and habitat range areas, would not be directly affected by entrainment or impingement. The localized effect of alteration of flow, ambient temperature, or water quality found near the CWIS (which are usually submerged) is considered negligible for all mammals with the exception of the West Indian manatee and some pinnipeds.

For all other aquatic mammal species, there is the potential for indirect effect of the proposed action to affect the general aquatic habitat, change fish community composition (including forage fish and prey species upon which mammals may depend for a high quality diet). The grizzly bear's diet may be dominated by fish (themselves subject to I&E and other indirect effects of CWIS) on a seasonal basis and may therefore be indirectly affected by the proposed action. Accordingly all listed T&E mammal species were assumed to have potential indirect effects of the proposed action.

Baleen whales

Baleen whales (Sub-order Mysticeti) include the blue, finback, humpback, right whale (two DPS), and sei whales. These are oceanic, migratory species that travel many thousands of miles annually, often to follow prey items. They are characterized by having baleen plates for filtering food from water, rather than having teeth. Their diet may include krill, small schooling fish (e.g., herring, capelin, and sand lance), and squid.

It was generally judged that these species, due to their size, mobility and habitat range areas, would not be directly affected by entrainment or impingement. However, there is the potential for indirect effect of the proposed action to affect the general aquatic habitat, which may change fish community composition (including forage fish and prey species upon which mammals may depend for a high quality diet). Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Toothed whales

Toothed whales (Sub-order Odontoceti) include the killer and sperm whale. These are oceanic, migratory species which are predators. Killer whales' diet is often geographic or population specific and includes fish, marine mammals (e.g., seals), and sharks. Sperm whales' diet includes large squid, sharks, skates, and fish.

It was generally judged that these species, due to their size, mobility and habitat range areas, would not be directly affected by entrainment or impingement. However, there is the potential for indirect effect of the proposed action to affect the general aquatic habitat, which may change fish community composition (including forage fish and prey species upon which mammals may depend for a high

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quality diet). Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Pinnipeds

Two pinniped species were identified as potentially affected by the proposed action. This includes the Stellar sea-lion (two DPS) and spotted seal. Steller sea lions prefer the colder temperate to sub-arctic waters of the North Pacific Ocean but also has critical habitat in Oregon and California. The spotted seal is found only in Alaskan waters,

Steller sea lions are opportunistic predators, foraging and feeding primarily at night on a wide variety of fishes (e.g., capelin, cod, herring, mackerel, pollock, rockfish, salmon, sand lance, etc.), bivalves, cephalopods (e.g., squid and octopus) and gastropods. Spotted seal adults mainly feed on herring, arctic cod, pollock, and capelin while juveniles feed mainly on krill and small crustaceans.

It was generally judged that these species, due to their size, mobility and habitat range areas, would not be directly affected by entrainment or impingement. However, there is the potential for indirect effect of the proposed action to affect the general aquatic habitat, which may change fish community composition (including forage fish and prey species upon which mammals may depend for a high quality diet). Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

Manatee

Manatees are marine mammals found in marine, estuarine, and freshwater environments. Manatees' range is generally restricted to the southeastern United States; individuals occasionally range as far north as Massachusetts and as far west as Texas. Specific habitat types/use areas include foraging and drinking sites, resting areas, and travel. Manatees are herbivores that feed opportunistically on a wide variety of marine, estuarine, and freshwater plants, including submerged, floating, and emergent vegetation.

Manatee have little tolerance for cold water temperatures. Historically, this sub-species has sought out natural, warm-water sites, including springs, deep water areas, and areas thermally influenced by the Gulf Stream, as refuges from the cold. However, this species now finds seasonal (overwintering) refuge in the thermal discharge of many power plants along the west coast of Florida.

It was generally judged that these species, due to their size, mobility and habitat range areas, would not be directly affected by entrainment or impingement. However, due to the high degree of seasonal exposure to the thermal plume of the power plants and threat of cold shock should the power plant go off-line suddenly, it was judged that the manatee would be susceptible to thermal and chemical alterations in their immediate environment. In addition, there is the potential for indirect effect of the proposed action to affect the general aquatic habitat, which may change plant community composition and affect food availability for the manatee. Currently, EPA does not have sufficient data to evaluate whether this species has been affected by existing CWIS and associated discharges.

Other Mammals

Sea otters are a member of the weasel family (Mustelidae) and live in the nearshore waters along the North Pacific coastline. They are the smallest marine mammal. Sea otters dive to gather food from the ocean floor in relatively shallow water in areas with both rocky substrates and soft bottom sediments. Sea otters eat a wide variety of benthic invertebrates including: clams, crabs, sea urchins, snails, octopus, and occasionally fish and sea birds'

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Grizzly bears are large terrestrial predators found in mountainous areas of the interior of the Western U.S. As opportunistic feeders, the grizzly bear's diet may be seasonally dominated by fish including Pacific salmonids (themselves subject to I&E and other indirect effects of CWIS) and therefore may be indirectly affected by the proposed action.

Two other terrestrial mammals were identified as potentially affected – ocelot and Lower Keys march rabbit. Both of these species may be affected by indirect action of the proposed action, however incidental.

It was generally judged that these four species, due to their size, mobility and habitat range areas, would not be directly affected by entrainment or impingement. However, there is the potential for the proposed action to affect the general aquatic habitat, which may change fish community composition (including forage fish and prey species upon which mammals may depend for a high quality diet). Currently, EPA does not have sufficient data to evaluate whether species in this category have been affected by existing CWIS and associated discharges.

2.4.7 Reptiles

EPA reviewed and refined the list of potentially affected T&E reptilian species using the factors described in Section 2.4 (**Table 2-2**). The refined list includes 11 species (with two DPS): six marine turtles (green, hawksbill, leatherback, loggerhead, Kemp's ridley, and olive ridley) and three freshwater reptilians (American crocodile, Alabama red-belly, and ringed-map turtle) and two largely terrestrial lizards.

Sea turtles, also called "marine turtles," are air-breathing reptiles with streamlined bodies and large flippers. Sea turtles are well-adapted to life in the marine environment and live most of their lives in the ocean, with adult females returning to beach areas only to lay their eggs. They often migrate long distances in oceanic waters between foraging grounds and nesting beaches. Sea turtles may be encountered anywhere within the limits of the Coastal Region and thus overlap with most if not all of regulated facilities in coastal regions.

Threats to sea turtles include entanglement in fishing nets or gear, marine debris (both entanglement and ingestion), environmental contamination, disease (i.e., fibropapillomatosis), and loss or degradation of nesting areas (NRC 1990, NMFS 2011). Power plants can also pose a threat to sea turtles due to both CWIS as well as alternation of natural nesting habitat (e.g. California State Lands Commission 2008).

EPA identified a total of 13 facilities subject to the 316b final regulation which have documented IM&E of sea turtles. Importantly, each of these 13 facilities reporting sea turtle take has undergone, or is currently undergoing, consultation with NMFS. Although 13 facilities were identified with document turtle IM&E, the St. Lucie Nuclear Power Plant accounts for more than 95% of take (both non-lethal and lethal), and a turtle conservation program has long been in operation at the facility. Typical effects on entrained individuals are minimal, including minor cuts and scrapes; the vast majority of entrained turtles are released unharmed. Notably, a high proportion of turtles entrained in CWIS are observed to suffer from fibropapillomatosis, or have been injured from boat strikes.

There is no clear evidence of loss of American crocodile to I&E. However, crocodile nests have been observed on the berms of canals used for power plant cooling systems in Florida (see Table 9-1) suggesting they could be affected by an altered aquatic habitat. Both the Alabama red-belly or ringed

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map turtles have habitats overlaps with facility HUC and could potentially inhabit waterbodies adjacent to regulated facilities. These waterbodies may be altered – and therefore, both species of turtles were judged to be susceptible to environmental and indirect effects of the proposed action. Currently, EPA does not have sufficient data to evaluate to what extent these species have been affected by environmental alterations or indirect effects of existing CWIS and associated discharges.

2.4.8 Snails

EPA reviewed and filtered the list of potentially affected T&E snail species using the factors described in Section 2.4 (**Table 2-2**). The refined list includes fifteen species of freshwater snails. While the life history of many of these species is poorly understood, most of these species have habitat in medium to large rivers, adhering to rock or solid substrate, with a herbivorous/detritivorous diet. Many of the freshwater snails are found in one or two watersheds.

Due to the general use of attached eggs and with the adults having a sessile, substrate-clinging existence, it was judged unlikely that snail species would be subject to significant entrainment and impingement effects unless dislodged directly in the area of the CWIS (a secondary effect of flow alteration). Accordingly, T&E snail species were judged likely to be affected by flow alteration, thermal discharges and chemical discharge as well as indirect trophic impacts. Currently, EPA does not have sufficient data to evaluate to what extent these species have been affected by environmental alterations or indirect effects of existing CWIS and associated discharges.

Abalone

White and black abalone are large marine gastropod mollusks potentially affected by the proposed action. Both reproduce by releasing their eggs and sperm into the surrounding water to be fertilized (broadcast spawning).

White abalone occupy rocky substrates near sand channels and are reported to be most abundant between 25-30 m (80-100 ft) depth. They are herbivorous and feed on various macroalgae. Black abalone are found in rocky intertidal and subtidal habitats in areas of moderate to high surf and can withstand extreme variation in temperature, salinity, moisture, and wave action. Black abalone are herbivores that primarily eat kelp species.

None of the species in this category were identified with documented I&E impacts during EPA's analysis of facility biological monitoring data. However, due to their coastal habitat and reproductive strategy, these species could be potentially affected by I&M and environmental alterations.

2.4.9 Plants

Johnson sea grass (*Halophila johnsonii*) was identified as potentially affected by the proposed action. This plant species is an important benthic resource as a fish shelter and nursery habitat and as a food source for manatees and green sea turtles. It is found in coastal lagoons in the intertidal zone in locations along Florida's Atlantic coast. The species has been found in coarse sand and muddy substrates and in areas of turbid waters and high tidal currents. Johnson's seagrass is more tolerant of salinity, temperature, and desiccation than other seagrasses in the area.

This species was not identified with documented I&E impacts during EPA's analysis of facility biological monitoring data. However, due to its coastal lagoon habitat this species could be potentially affected by environmental alterations associated with the proposed action.

3. Listed Species & Habitat Ranges in Action Areas

Few data are available which allow EPA to estimate take of T&E species at facilities subject to the 316(b) final rule. Consequently, to assess the potential for impacts of the final rule on T&E species, EPA identified current spatial overlap between the locations of CWISs subject to the rule and the location of federally designated critical habitats or habitat range used by the affected T&E species identified in **Table 2-2**. This comparison was extended to all vulnerable life history stages of all aquatic T&E species for which data are available. Examples of vulnerable stages include planktonic egg stages occurring near- or in-shore (e.g., marine species spawning offshore were excluded unless other vulnerable stages are found near- or in-shore), free-swimming larval stages residing near- or in-shore, and adult life history stages that occur near – or in-shore. However, due to the uncertainty regarding the location of all facilities and CWIS, EPA was not able to conclusively identify all listed species or associated life stages that could be potentially affected. Accordingly, EPA followed ESA regulations requiring the assumption of a reasonable worst case analysis when more accurate data are unavailable.

For the identification of potentially -affected T&E species, EPA considered the whole complement of aquatic and aquatic-dependent species as determined as described in Section 2.4. These species may be directly or indirectly affected by the proposed action. Aquatic-dependent wildlife species are reptiles, birds, and terrestrial mammals whose diet contains an appreciable proportion of aquatic organisms. These species are likely to be only indirectly affected by the proposed action by impacts to prey items.

3.1 Sources of Critical Habitat and T&E Species Information

As a first step, all animal species currently listed or in consideration for listing under the Endangered Species Act (as of August 6, 2012), and not excluded from further consideration (as described in Section 2.4) were identified using the FWS Environmental Conservation Online System (U.S. FWS 2012). After filtering by life history data, the original list of 692 T&E species contained 336 animal species potentially affected by IM&E. Notably, this list excluded all species considered threatened or endangered by scientific organizations [e.g., the American Fisheries Society (Williams et al. 1993; Taylor et al. 2007; Jelks et al. 2008)] which are not yet officially protected under the ESA.

Whenever possible, the geographical distribution of the 312 T&E species and DPS susceptible to IM&E was obtained in geographic information system (GIS) format as polygon (shape) files, line files (for inhabitants of small creeks and rivers) and as a subset of geodatabase files. Data sources include the FWS (U.S. FWS 2012), NOAA's Office of Response and Restoration (NOAA 2010), NatureServe (NatureServe 2012), and NOAA NMFS (NMFS 2010; NMFS 2010; NMFS 2010). For many species, geographic ranges were available only as 8-digit hydrologic unit codes (HUC) (NatureServe 2013; U.S. FWS 2012) and are consequently likely to overestimate the number of facilities with which T&E habitat overlaps. For species with only HUC8 data available, GIS data layers were generated using a GIS HUC database obtained from the USGS (Steeves and Nebert 1994). For several species, no GIS data could be acquired. For these species, whenever possible, species distribution descriptions were compared with mapped CWISs, and inspected for geographic overlap. In all such cases where data were available, there were no complying CWISs within 10 kilometers, and further inspection was not warranted. However, detailed estimates of habitat were

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unavailable for several species; these species were not excluded from discussion of potential impacts and cumulative effects, but are by necessity excluded from the analysis of geographical overlap.

3.2 Facilities with Potential T&E Concerns

To evaluate the potential baseline impact of CWIS on ESA-listed species, geographical overlaps between CWIS and T&E habitat range was assessed in GIS for both (1) federally-designated critical habitat, and (2) T&E species habitat ranges not designated as critical habitat. For each facility and habitat classification, EPA identified the total number of T&E species whose habitat range overlapped the CWIS. This calculation allowed EPA to investigate the potential for individual regulated facilities to affect a wide variety of T&E species. Additionally, this analysis allowed EPA to assess the magnitude of differences of CWIS on T&E species among geographic regions.

Data for the latitude, longitude, and flow characteristics of CWIS were collected from EPA's Section 316(b) Detailed Questionnaire (DQ) and Short Technical Questionnaire (STQ) for facilities known to be regulated. The 805 facilities illustrated in Exhibit 3-1 represent a census of all generators and a sample of manufacturing facilities. To ensure the universe of all facilities potentially regulated was identified, EPA obtained facility location for an additional 2,925 locations by querying the National Pollutant Discharge Elimination System permitting. Although the location of these facilities is known, CWIS information, including receiving waterbody type, size and intake flow, are unknown.

Some regulated facilities have more than one CWIS. However, given the close geographical proximity of these CWIS, all overlaps were aggregated at the level of the regulated facility.

3.2.1 Overlap Between CWIS and T&E Habitat

A total of 3,490 facilities currently regulated and potentially regulated under section 316(b) (out of 3,730 identified facilities) have CWIS that overlap with habitat used by one or more T&E species (Exhibit 3-2). These overlaps occur throughout the country. Notably, because of the global distributions of several species of sea turtles, and coastal-scale distributions of various sturgeon species, nearly all coastal facilities overlap with at least one T&E species (All GIS data and summary files necessary to recreate these figures and the overlap analysis can be found in the data files accompanying this BE). However, despite the level of overlap, data do not exist to determine the extent to which this geographical overlap impacts individuals or populations of T&E species.

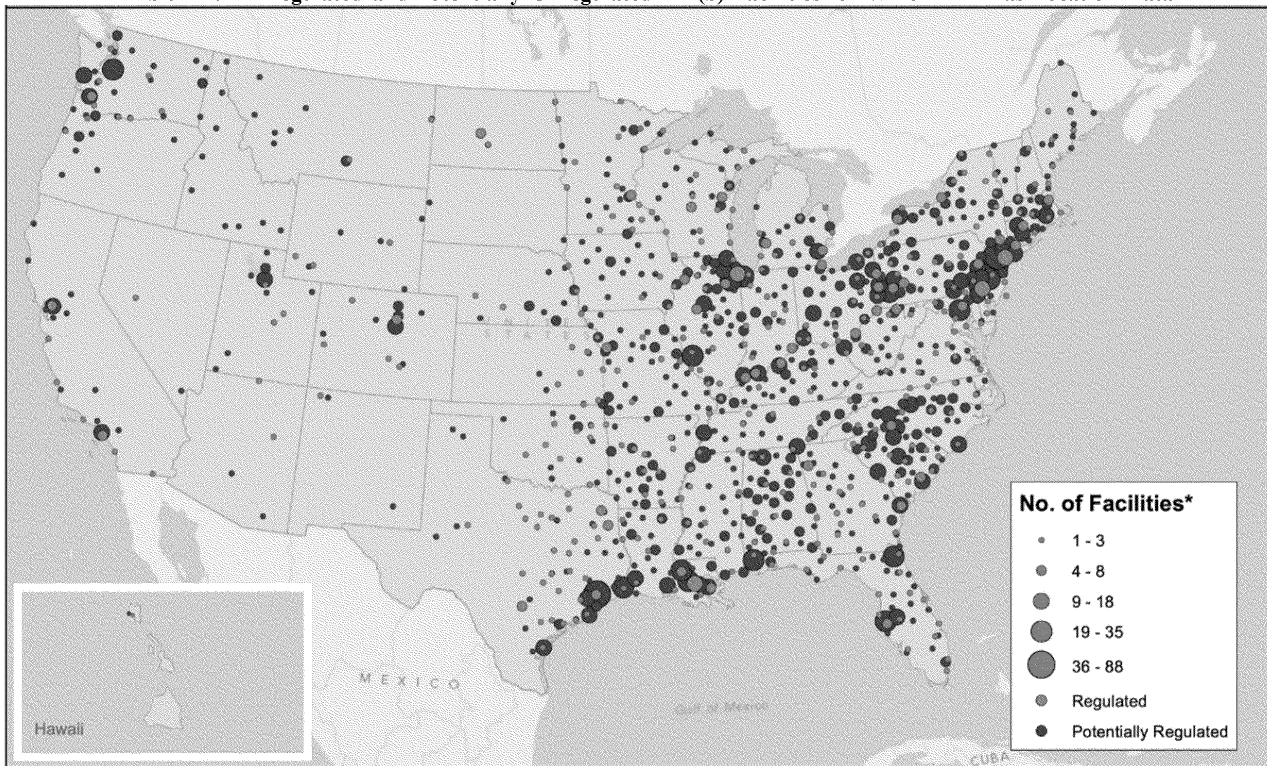
Under the final rule, all regulated facilities are required to submit baseline source water biological characterization data. Among other data, these studies will identify T&E species present; this data will then be used by EPA to establish BTA standards for EM on a site-specific basis. Of the 768 facilities known to be regulated and whose CWIS overlap one or more T&E species, 258 facilities (37%) withdraw more than 125 mgd AIF (Exhibit 3-3). In addition to baseline biological characterization data, these 258 facilities must develop and submit an entrainment characterization study to EPA. These entrainment studies may identify IM&E of T&E species, information that will be considered by EPA in its determination of BTA for EM on a facility-specific basis, both at the facility conducting the IM&E study, as well as at nearby facilities.

To estimate the potential impact of the final rule on T&E species, EPA used information obtained from the Section 316(b) DQ and STQ to identify regulated facilities already likely to be in compliance with the final rule's impingement requirements (note: since EM standards are determined on a site-specific basis, no determination could be made as to a facility's overall compliance with the

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rule). From the DQ and STQ, EPA was able to determine the status of impingment controls for 335 regulated facilities. Of these facilities, 143 (43%) are likely to be in compliance with the impingment requirements of the final rule, and 192 (57%) are unlikely to be in compliance. Therefore, it is likely that the implementation of the final rule will reduce the IM&E of T&E species at many facilities.

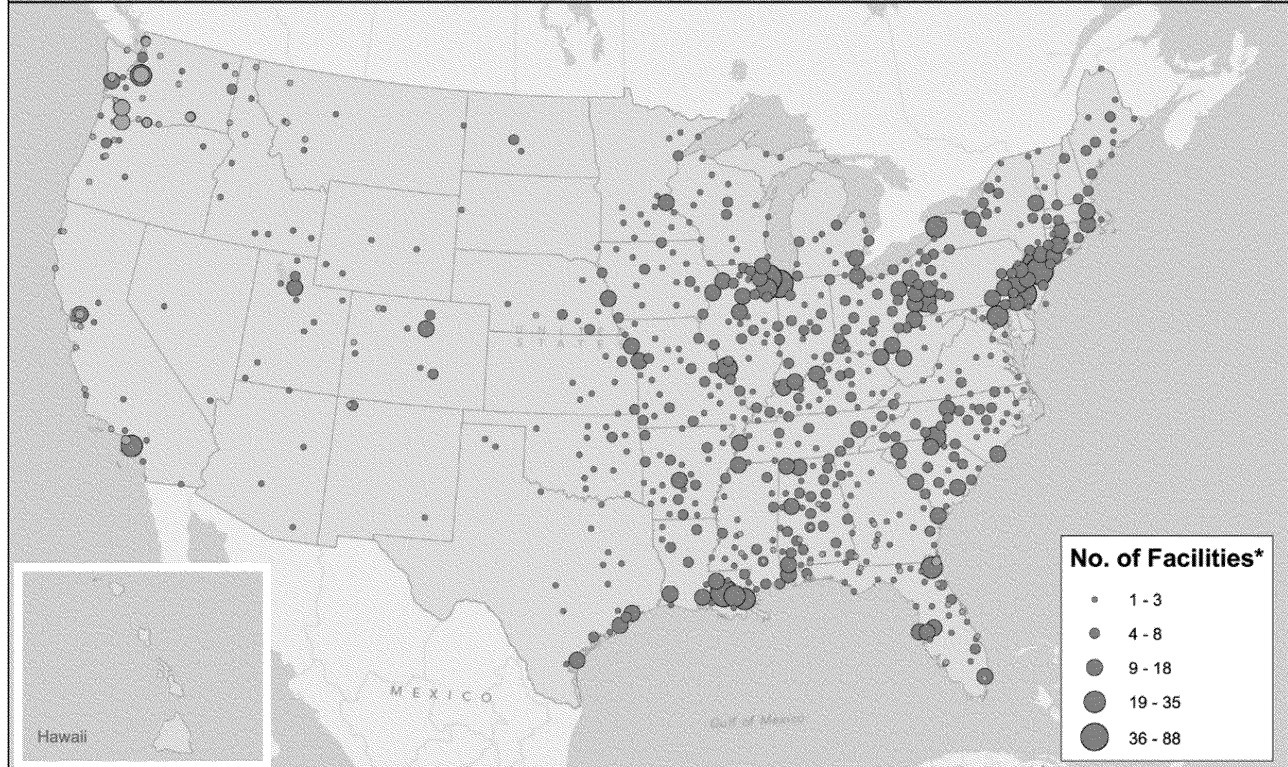
Exhibit 3-1: All Regulated and Potentially Unregulated 316(b) Facilities for Which EPA has Location Data



This map shows the 805 facilities known to be regulated by the rule (in orange), and the 2,925 facilities potentially regulated by the rule (in red). In total, EPA estimates that a total of 1,207 facilities withdrawing at least 2 million gallons per day will be subject to the rule.

**The size of the point symbols reflects the number of facilities within a 10 mile radius.*

Exhibit 3-2: Regulated and Potentially Regulated Facilities Overlapping with T&E Species' Critical Habitat and Habitat Ranges



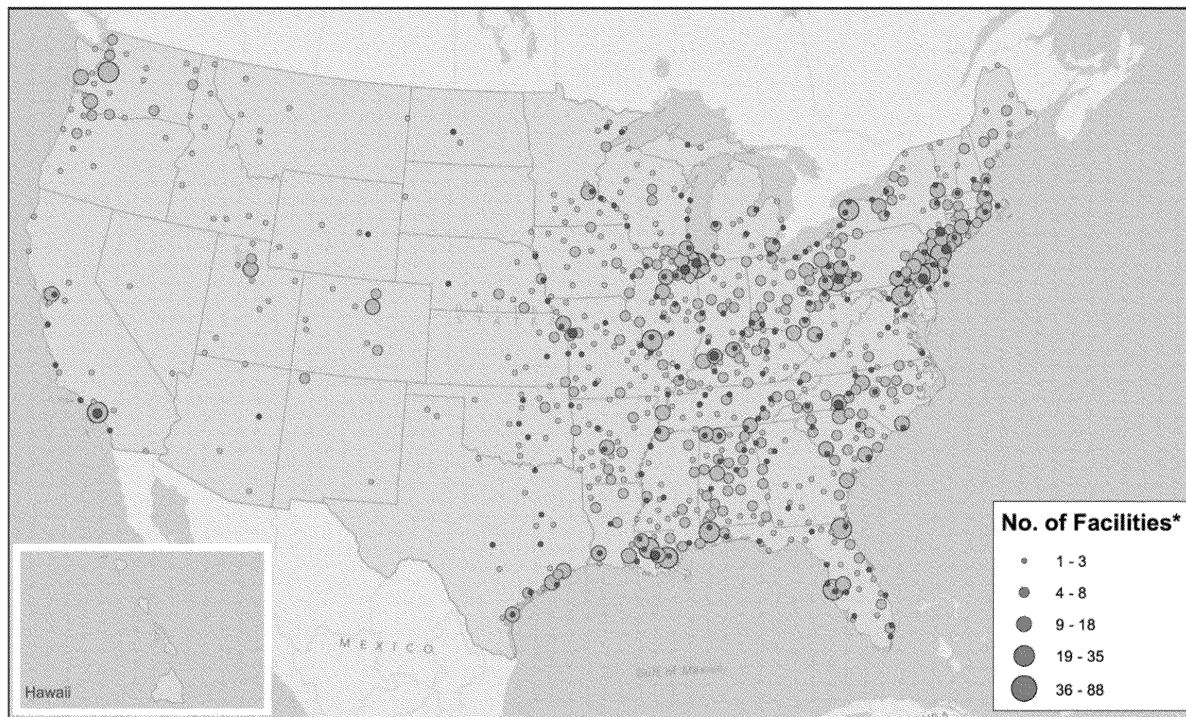
● Cooling water intakes within the habitat range of one or more T&E species (3,490 facilities). Source: IUCN, Nature Serve, FWS and NOAA

● Cooling water intakes within Critical Habitat designated for one or more T&E species (153 facilities). Source: U.S. FWS/NOAA

Note: Facilities with cooling water intake structures overlapping critical habitat are a subset of those facilities with cooling water intakes in the total habitat range of T&E species. A total of 3,490 facilities overlap with habitat and/or critical habitat of T&E species.

*The size of the point symbols reflects the number of facilities within a 10 mile radius.

Exhibit 3-3: Cooling Water Intake Flow at 316(b) Regulated and Potentially Regulated Facilities Overlapping with T&E Species' Critical Habitat and Habitat Ranges



Average Daily Cooling Water Intake Flow.

The rule requires entrainment studies at facilities withdrawing more than 125 million gallons per day (MGD).

● Cooling water withdrawal less than 125 MGD (3,227 facilities). Source: U.S. EPA, 316(b) Industry Survey, 2000.

● Cooling water withdrawal more than 125 MGD (263 facilities). Source: U.S. EPA, 316(b) Industry Survey, 2000.

*The size of the point symbols reflects the number of facilities within a 10 mile radius.

3.2.2 CWIS / Critical Habitat Overlaps

A total of 153 regulated and potentially regulated facilities have CWIS that overlap with habitat designated to be critical habitat (Exhibit 3-2). The extent to which this overlap results in degraded habitat, however, is unknown. Although found throughout the country, clusters of CWIS / Critical Habitat overlap occurring due to identifiable species groups occur in the Pacific Northwest and California (CWIS overlaps with Pacific Salmonids), and Florida (CWIS overlaps with West Indian Manatee). Those CWIS overlapping with both critical habitat and other T&E habitat are classified as CWIS overlapping with critical habitat on Exhibit 3-2.

3.3 T&E species with Potential Impacts from CWIS

On a per-facility basis, the variability in the number of T&E species overlapping with CWIS ranges between 0 and 34 species, with more than 92 percent of facilities affecting 15 or fewer species, and 85 percent of facilities affecting 10 or fewer T&E species (Exhibit 3-4). Excluding facilities whose CWIS do not overlap with at least one T&E species, the average number of species per facility is 4.9 (minimum 1, maximum 34). Driven by the high number of IM&E freshwater mussels and bird with wide-ranging habitats overlapping with facility CWISs, the majority of all species by facility interactions occur inland.

To investigate the cumulative potential for CWISs to affect individual T&E species, EPA calculated the number of facilities overlapping habitat potentially used by all T&E species. Across all 215 T&E species overlapping with one or more CWIS nationally, there are 21,039 instances of species and facility overlaps, resulting in an average of 97.9 facilities per species (Table 3-1). Consequently, many T&E species overlap with, and may be affected by a large number of facilities. Thus, even if individual facilities have low IM&E of T&E species, and if the majority of these interactions occur at

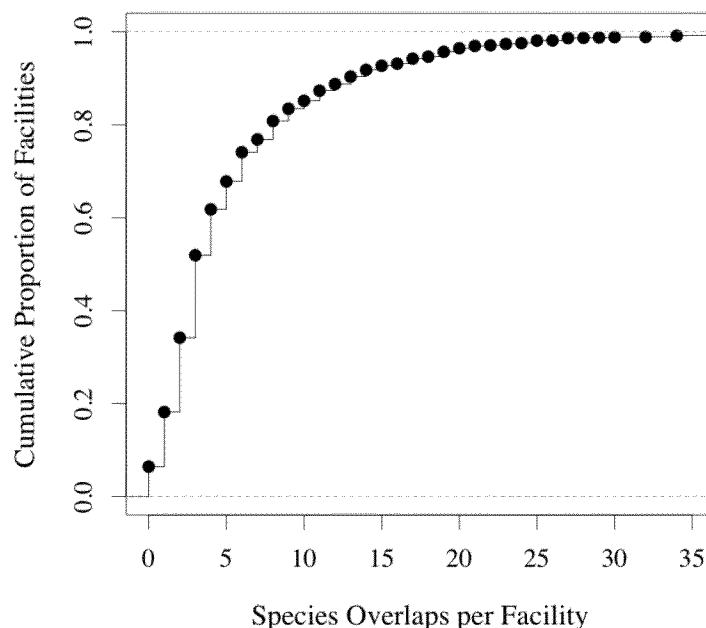


Exhibit 3-4: Empirical Cumulative Distribution Function Plot of the Number of T&E Species With Life History Stages Vulnerable to CWIS Overlapping Facilities Regulated by, and Potentially Regulated by the 316(b) Final Rule

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facilities not ultimately regulated by the proposed action (e.g., if the manufacturing facilities identified from NPDES databases are not regulated by the final rule), the cumulative impact of 316(b) facilities on these populations may still be substantial.

Table 3-1: Number of Facilities with CWISs Within the Geographical Distribution of T&E Species, on a Per-species Basis

Subset of Affected Species ¹	Species	Geographic Overlaps	Facilities per T&E Species	
			Average	Maximum
All T&E Species	215	21,039	97.9	2,011
T&E Clams	82	9,282	113.2	683
T&E Birds	15	3,582	238.8	2,011
T&E Fish	77	3,544	46.0	515
T&E Mammals	8	818	102.3	226
T&E Reptiles	10	1,209	120.9	260
T&E Snails	17	2,412	141.9	329
T&E Amphibians	3	76	25.3	55
T&E Corals ²	2	32	16.0	16

¹ T&E species included species listed as threatened or endangered by the US Fish and Wildlife Service (fresh water) or NOAA National Marine Fisheries Service (marine)

² Accurate habitat for the proposed coral species was unavailable, and these species were excluded from the overlap analysis.

The variation among overlaps between species and CWIS was large and ranged between 0 and 2,011 CWIS overlaps per species (Table 3-1). Of the 312 T&E species with life history stages or significant prey items vulnerable to CWIS effects, 97 (31%) did not overlap with any facilities, and 111 (36%) overlapped with a maximum of one facility. Accordingly, the habitat of 201 (64%) T&E species overlapped with more than one CWIS potentially regulated by the final 316(b) rule. Overall, 156 species (50%) had habitat which overlapped with more than 10 CWIS, while 123 (39%) species had habitat overlapping with more than 25 facilities (Exhibit 3-5).

When species were analyzed within broad taxonomic grouping, birds had the highest average number of overlapping facilities (238.8), a value skewed by these species' ranges. However, the potential impacts for birds are likely to be smaller than for other taxonomic groupings, because all potential effects are indirect. Following birds, snails (driven by species located in areas with a dense cover of facilities) had the highest average number of overlapping facilities (141.9 facilities per species). Unlike birds, however, mussels have the potential for significant impact because of their complex life history traits and reliance upon fish species as hosts.

Nationally, 215 T&E species with the potential to be affected by CWIS operations overlap with a minimum of one CWIS. Thus, although there is little documented evidence showing any effects, the large degree of CWIS overlap with T&E habitat is suggestive that T&E individuals and populations may be affected by the proposed action. Geographically, the potential for these impacts is widespread: T&E species overlap CWISs in all geographical regions of the country, in all waterbody types, and across multiple life histories. Overall, 94 percent of regulated and potentially regulated facilities overlap with at least one T&E species. Notably, our analysis includes only federally listed T&E species. Thus, the number of T&E species (including those species defined as threatened or endangered under state law) affected by the proposed action is understated.

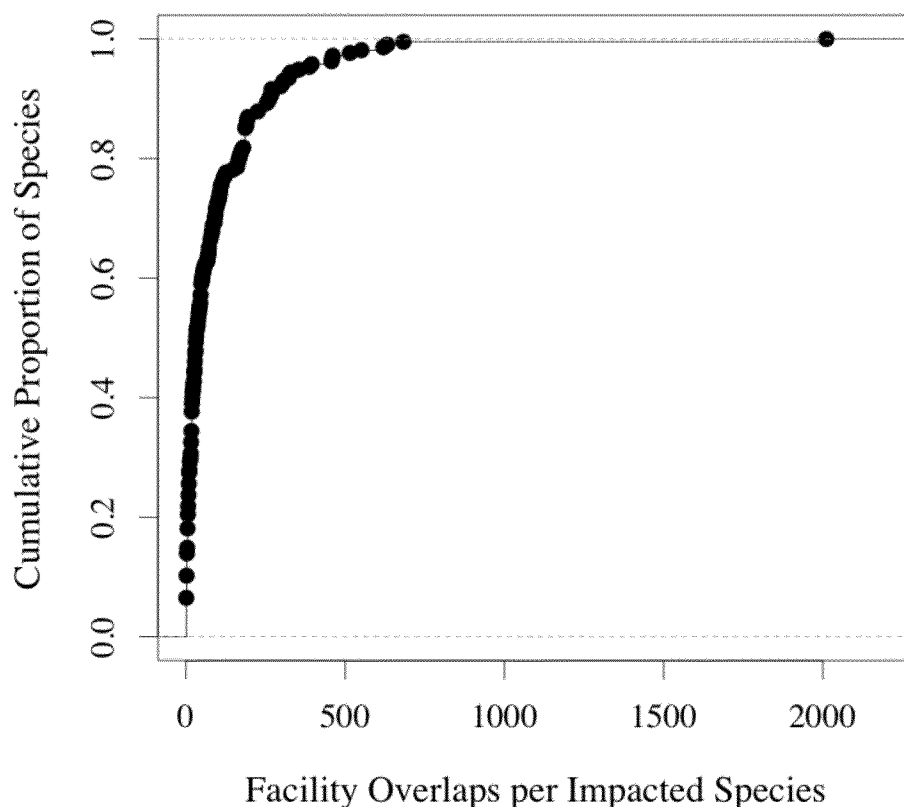


Exhibit 3-5: Empirical Cumulative Distribution Function Plot of the Number of Regulated and Potentially Regulated Facilities Overlapping with T&E Species with Life Histories Vulnerable to CWIS

3.4 T&E Species with Documented IM&E

EPA obtained and analyzed 431 facility-years of IM&E studies from 98 facilities (summaries and original copies of IM&E studies, study years, and reported losses can be found in the data files accompanying this BE). In these studies, EPA identified only 8 T&E fish species with observed losses to the species level (Table 3-2). These species with losses included Atlantic Salmon, Chinook Salmon, Coho Salmon, Delta Smelt, Longfin Smelt, Pallid Sturgeon, Steelhead Trout and Topeka Shiner. In some cases, sufficient data was available to extrapolate losses among facilities within the habitat region of the T&E species. For others, either insufficient information was available to extrapolate losses to the regional scale, or losses were recorded qualitatively.

To estimate annual, non-extrapolated loss values, EPA calculated an average annual loss rate for each facility reporting losses. These facility-specific raw loss rates were corrected to account for any technology installed to reduce IM&E between the sampling year and present, and summed to estimate reported annual losses. In no cases were T&E species observed in IM&E studies in more than three facilities, and in no case were these observations more recent than 1992.

To estimate losses throughout a T&E species' range for these fish, EPA first collected all IM&E studies where T&E species losses were reported. Using these studies, average annual losses are computed for impingement and entrainment losses separately within facility, summed across

Table 3-2: Estimated Annual Take of T&E Species with Documented Losses

Common Name	Latin Name	Baseline Estimates of Mortality for IM&E		
		Qualitative ^a	Not Extrapolated	Extrapolated
Atlantic Salmon	<i>Salmo salar</i>	✓		
Chinook Salmon	<i>Oncorhynchus tshawytscha</i>		609	
Coho Salmon	<i>Oncorhynchus kisutch</i>	✓		
Delta Smelt	<i>Hypomesus transpacificus</i>		19,626	
Green Sea Turtle	<i>Chelonia mydas</i>		5.3	
Hawksbill Sea Turtle	<i>Eretmochelys imbricata</i>		0	
Kemp's Ridley Sea Turtle	<i>Lepidochelys kempii</i>		1.9	
Leatherback Sea Turtle	<i>Dermochelys coriacea</i>		0	
Loggerhead Sea Turtle	<i>Caretta caretta</i>		3.29	
Longfin Smelt	<i>Spirinchus thaleichthys</i>		41,359	
Olive Ridley Sea Turtle	<i>Lepidochelys olivacea</i>		0	
Pallid Sturgeon	<i>Scaphirhynchus albus</i>		9	90
Steelhead Trout	<i>Oncorhynchus mykiss</i>		0.62	
Topeka Shiner	<i>Notropis topeka</i>		22.5	3,985

^a "Qualitative" indicates the species is reported by name from a minimum of one facility, but no loss estimates are provided.

^b Estimated IM&E reported reflects raw losses (e.g., eggs, larvae, juvenile, adults reported equally).

Source: U.S. EPA analysis for this report

facilities, and divided by summed MGD AIF across all facilities reporting losses to calculate average annual loss-rates per MGD intake flow for impingement and entrainment. Second, EPA identified all 316(b) facilities within a species' range, and calculated technology-weighted intake flow rates for impingement and entrainment at all facilities. For example, if a facilities' raw AIF is 100 MGD, but it has installed technology that is 50% effective at reducing impingement losses, and 30% effective at reducing entrainment losses, then the technology-weighted impingement flow rate for this facility would be 50 MGD, while the technology-weighted entrainment flow rate for the facility would be 70 MGD. Regional AIF is then summed separately for impingement and entrainment, multiplied by per-MGD loss rates, and then summed across loss-modes to obtain the estimate of extrapolated loss.

In addition to these IM&E studies, EPA obtained long-term estimates of turtle take (both non-fatal and fatal) from a total of 13 power plants. Using these data, EPA estimated annual rates of mortality on a facility-specific basis, for only these facilities. At some facilities, only those data acquired after the installation of turtle excluding devices and procedures were counted (e.g., Salem, only data collected after 1993 is used). No extrapolation occurred with turtle mortality estimates, because the facility sample is heavily biased by a single facility, the St. Lucie Nuclear Power Plant, which was responsible for more than 98% of all turtle take from the 13 facilities identified. (Summaries and original copies of turtle IM&E reports and incidental permits can be found in the data files accompanying this BE). Moreover, each of these 13 facilities have conducted consultation with the Services, and received incidental take permits. Therefore, it is unlikely that these 13 facilities represent an unbiased sample suitable for extrapolation.

Including only individuals identified to T&E species, and after extrapolating where possible, EPA identified more than 65,000 eggs, larvae and adult fish and sea turtles lost to IM&M under baseline conditions (). However, for several reasons, T&E species suffering IM&E are likely to be underreported. First, T&E species are found at low population densities, and the volume of water sampled by facility-level impingement and entrainment studies is low. Thus, it is likely that many

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T&E species suffered IM&E outside of sampling periods and are never recorded. Second, because a high proportion of all IM&E occur during early life history stages (i.e., egg, larvae) when species identification is more challenging, T&E species may not be recognized during sampling (e.g., endangered species of darter, including the Cherokee and duskytail darters, may be reported as “darter,” or “unidentified darter”). Third, if fish return technology is working properly, impinged fish are returned to the waterbody, and may be injured. In IM&E studies conducted prior to the mid 1990s, these fish were not typically tracked, and may represent uncounted take.

Although take is likely under-reported, there is frequently insufficient data to extrapolate losses within species to a regional scale. Moreover, because the majority of the IM&E studies EPA has identified are more than 20 years old, they are unlikely to be representative of current losses, and frequently do not take seasonal or diel differences into account when extrapolating losses within facility and year. Consequently, there is insufficient data to properly account for T&E losses. Data collected following passage of the 316(b) final rule will begin to alleviate these data deficiencies.

In addition to documented instances of IM&E of T&E species, EPA also identified IM&E occurring in genera with endangered species.²¹ For example, losses reported for individuals of species within the genus *Acipenser* may represent the take of one (or more) T&E species – but may also represent more numerous congeners (Table 3-3). Although these are not confirmed IM&E of T&E species, they provide evidence that additional T&E species are likely to be directly affected by IM&E.

Table 3-3: Take of T&E Species with Documented Losses Within Genus

Genus	T&E Congener	Common Name	Baseline Estimates ^a of Mortality for IM&E ^b	
			Not Extrapolated	Extrapolated
Acipenser	Atlantic Sturgeon	<i>Acipenser oxyrinchus oxyrinchus</i>	8,174	785,667
	Gulf Sturgeon	<i>Acipenser oxyrinchus desotoi</i>		
	Shortnose Sturgeon	<i>Acipenser brevirostrum</i>		
	Green Sturgeon	<i>Acipenser medirostris</i>		
Scaphirhynchus	Alabama Sturgeon	<i>Scaphirhynchus suttkusi</i>	241	8,174
Phoxinus	Blackside Dace	<i>Phoxinus cumberlandensis</i>	10	

^a Estimated IM&E reported reflects raw losses (e.g., eggs, larvae, juvenile, adults reported equally).

^b IM&E reported for genera reflect IM&E for all species within the genus. Losses are likely dominated by more common congeners

²¹ Identifying organisms to genus (the taxonomic grouping immediately superior to species) is typically easier to accomplish than identifying organisms to species. In many cases (e.g., egg or larval life history stages, genera with species differentiated genetically, rather than morphologically), it may not be possible to reliably identify organisms to species

4. Baseline Environmental Conditions

This assessment of baseline environmental conditions considers the natural and anthropogenic forces that affect the abundance and distribution of ESA-listed species, and the condition of their habitats. The environmental baseline includes the past and present impacts of all Federal, State, or private actions and other human activities in the action area, the anticipated impacts of all proposed Federal projects in the action area that have already undergone formal or early ESA Section 7 consultation, and the impact of State or private actions which are contemporaneous with the consultation in process (50 CFR §402.02).

This section complements information provided in Section 3.0 of this BE detailing estimates of current (baseline) IM&E of T&E species. Additionally, it provides context with which to interpret the results of effects analyses (Section 5.0) and the discussion of cumulative effects (Section 6.0).

The environmental baseline for this analysis is based on current conditions and important stressors found in aquatic ecosystem subject to the proposed action. EPA acknowledges that T&E species have been impacted by CWIS (as documented in Section 3.0) and recognizes that any take of listed species without an incidental take statement or ESA Section 10 take permit is in violation of ESA regulations. Thus, the term “baseline” reflects current conditions, but does not suggest that the status quo, which includes the take of T&E species, is acceptable.

CWIS impacts do not occur in isolation from other ongoing physical, chemical, and biological stressors on aquatic habitats and biota in the receiving waterbody (**Table 4-1**). Additional anthropogenic stressors may include, but are not limited to: degraded water and sediment quality, low dissolved oxygen (DO), eutrophication, fishing activities, channel or shoreline (habitat) modification, thermal pollution, hydrologic regime changes, invasive species, and so on. For example, many aquatic organisms subject to the effects of cooling water withdrawals reside in impaired (i.e., CWA 303(d) listed) waterbodies. Accordingly, they are potentially more vulnerable to cumulative impacts from other anthropogenic stressors (USEPA 2006).

The effect of these anthropogenic stressors on local biota may contribute to or compound the local impact of IM&E on T&E species, depending on the influence of location-specific factors. In addition to multiple stressors acting on biota near a single CWIS, multiple facilities and CWISs located in close proximity along the same waterbody may have additive or cumulative effects on aquatic communities (USEPA 2006) (see Section 6).

All ecosystems and their biota are subject to natural variability in environmental conditions (e.g., seasonal perturbations), as well as periodic large-scale disturbances in environmental settings (e.g., drought, flood, fire, disease). Indigenous aquatic species and communities are adapted to this natural variability, such that large-scale events elicit a predictable loss, response and recovery cycle. Conversely, anthropogenic stressors tend to be more chronic in nature and often do not lead to recognizable recovery phases. Instead these stressors often lead to long-term environmental degradation associated with lowered biodiversity, reduced primary and secondary production, and a lowered capacity or resiliency of the ecosystem to recover to its original state in response to natural perturbations (Rapport and Whitford 1999).

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Anthropogenic stressors are present to some degree in all waterbodies of the United States, and are the result of many different impacts (**Table 4-1**). Some of the more common and important stressors include: (i) aquatic habitat degradation; (ii) flow alteration; (iii) degraded water quality and sediment contamination; (iv) thermal pollution; (v) cumulative impacts of adjacent CWIS; and (vi) invasion by non-indigenous species (Rapport and Whitford 1999). CWIS-related impacts are considered here as a separate, seventh category of anthropogenic stress, one with many apparent similarities to overharvesting although the effects happen at earlier life stages. Other large-scale stressors, such as change in watershed land use and water withdrawals or diversions that reduce streamflow or water levels, may also be present (Section 6.0). Thus, the true impact of CWISs on an aquatic community may be partly masked, or difficult to detect, due to the influence of other stressors on the receiving water. Adverse impacts from CWIS are described in Chapters 2, 3 and 5 of this document. The adverse effects of three common stressors are described in the subsections to follow.

Table 4-1: CWIS Effects on Ecosystem Functions/Cumulative Impacts Potentially Affected, Both Directly and Indirectly, by 316(b) Regulations

Category	Direct/Indirect	Local/Regional/National
A. Impingement and Entrainment (direct and indirect effects)		
<i>Effects on Individuals</i>		
Loss of individuals (direct effects)	Direct	Local/Regional/National
Phytoplankton	Direct	Local/Regional/National
Zooplankton (excluding fish larvae/eggs)	Direct	Local/Regional/National
Invertebrates	Direct	Local/Regional/National
Fish	Direct	Local/Regional/National
Non-fish vertebrates	Direct	Local/Regional/National
<i>Species and Population-Level Effects</i>		
Alteration of phenology of system (function of % water reduction in stream)	Direct	Local/Regional/National
Altered distribution of populations	Direct	Local
Altered niche space	Direct	Local/Regional
Altered stable age distributions of populations	Direct	Regional
Loss of keystone species	Direct	Local
Loss of T&E species	Direct	Regional
Novel selection pressure (e.g., negatively buoyant or stationary eggs)	Direct & Indirect	Local
Reduced/altered genetic diversity	Direct & Indirect	Regional/National
Reduced lifetime ecological function of individuals	Direct	Local/Regional
<i>Community and Trophic Relationships</i>		
Altered competitive interactions	Direct & Indirect	Local
Disrupted trophic relationships	Direct & Indirect	Local
Disrupted control of disease-harboring insects (e.g., mosquito larvae, etc.)	Indirect & Direct	Local/Regional
Increased quantity of detritivores	Indirect	Local
Loss of ecosystem engineers (due to trophic interactions)	Indirect & Direct	Local
Reduced potential for energy flows (e.g. trophic transfers)	Indirect	Local/Regional
Species diversity and richness	Direct & Indirect	Local/Regional/National
Trophic cascades	Indirect & Direct	Local/Regional
<i>Ecosystem Function</i>		
Altered ecosystem succession	Indirect & Direct	Local/Regional
Decreased ability of ecosystem to control nuisance species (algae, macrophytes)	Indirect	Local
Disrupted cross-ecosystem nutrient exchange (e.g., up/downstream, aquatic/terrestrial)	Indirect	Regional

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Table 4-1: CWIS Effects on Ecosystem Functions/Cumulative Impacts Potentially Affected, Both Directly and Indirectly, by 316(b) Regulations

Category	Direct/Indirect	Local/Regional/ National
Disrupted nutrient cycling	Indirect & Direct	Local/Regional
Reduced compensatory ability to deal with environmental stress (resilience)	Direct & Indirect	Regional
Reduced ecosystem resistance	Indirect	Local/Regional
Reduced ecosystem stability (alternate states)	Indirect	Local/Regional
Sediment regulation	Indirect	Local/Regional
Substrate regulation	Indirect	Local
B. Thermal Effects (direct and indirect)		
Novel selection pressure (e.g., thermal optima, location of breeding, etc.)	Direct & Indirect	Regional/National
Altered phenology	Direct	Local/Regional
Links between temperature and metabolism		
Dissolved oxygen (physical)	Direct	Local
Dissolved oxygen (bacterial, respiratory rates)	Indirect	Local
Ecological energetic demands	Indirect	Local/Regional
Ecological nutrient demands	Indirect	Local/Regional
Altered algal productivity	Direct & Indirect	Local/Regional
Shifted nutrient cycling	Indirect & Direct	Local/Regional
C. Chemical Effects (anti-foulants, etc.)		
Altered survival/growth/production	Indirect & Direct	Local
Altered food web dynamics	Indirect	Local
D. Altered Flow Regimes (local and system-wide)		
Altered flow velocity	Direct & Indirect	Local/Regional
Altered turbulence regime	Direct & Indirect	Local/Regional
E. Cumulative Impacts (as a concentrated number of facilities)		
May push systems over the edge of nonlinearities in the system	Direct/Indirect	Local/Regional
Intensified CWIS effects (as above, Section B.)	Direct/Indirect	Local/Regional
Intensified thermal effects (as above, Section B.)	Direct/Indirect	Local/Regional

4.1 Loss of Aquatic Habitat

Structural aquatic habitat is generally recognized as the most significant determinant of the nature and composition of aquatic communities. Human occupation and restructuring of shorelines; construction and maintenance of harbors; installation of dams, canals, and other navigational infrastructure; draining of wetlands for agriculture and residential uses; and degradation of critical fish habitats have all taken a heavy toll on the numbers and composition of local fish and shellfisheries. Most 316(b) facilities have been built on shoreline locations where power-generation buildings, roadways, CWISs, canals, impoundments, and other water storage or conveyance structures have often been constructed at the cost of natural habitat, including terrestrial, aquatic, and wetlands.

The loss of coastal and estuarine wetlands that serve as important fishery spawning and nursery areas is particularly severe, with an estimated historical loss of 100 million acres of wetlands since the late 1700s (Bromberg and Bertness 2005; USEPA 2010). Critical fishery habitat loss is not restricted to nearshore environments. Decades of fishing activities have degraded offshore bottom habitats (Auster and Langton 1999; Turner et al. 1999).

The main impact of aquatic habitat loss is a reduction in the number of aquatic organisms in the environment, a concentration of spawning and nursery areas to fewer locations, shifts in species

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dominance based on available habitat and local extirpation of historical species, including T&E species. Habitat loss in adjacent shoreline areas exacerbates the effect of CWIS losses, since many fish species affected by IM&E (e.g., bay anchovy, winter flounder) rely on coastal wetlands as nursery areas.

4.2 Flow Alteration

The operation of CWISs and discharge returns significantly alter patterns of flow within receiving waters, both in the immediate area of the CWIS intake and discharge pipe, and in mainstream waterbodies. Flow alteration may be particularly disruptive in inland riverine settings. Flow alterations can create changes in the overall aquatic habitat and thus affect T&E species in a number of ways.

In ecosystems with strongly delineated boundaries (i.e., rivers, lakes, enclosed bays, etc.), CWISs may withdraw and subsequently return a substantial proportion of water available to the ecosystem. For example, of the 521 surveyed facilities that are located on freshwater streams or rivers, 31 percent (164) of these facilities have average intake greater than 5 percent of the mean annual flow of the source waters. Even in situations when the volume of water downstream of in-scope facilities changes relatively little, the flow characteristics of the waterbody, including turbulence and water velocity, may be significantly altered. This is particularly true in locations with multiple CWISs located close to each other.

Altered flow velocities and turbulence may lead to several changes in the physical environment, including sediment deposition (Hoyal et al. 1995), sediment transport (Bennett and Best 1995), and turbidity (Sumer et al. 1996), each of which play a role in the physical structuring of ecosystems. Biologically, flow velocity is a dominant controlling factor in aquatic ecosystems. Flow has been shown to alter feeding rates, settlement and recruitment rates (Abelson and Denny 1997), bioturbation activity (Biles et al. 2003), growth rates (Eckman and Duggins 1993), and population dynamics (Sanford et al. 1994).

In addition to flow rates, turbulence plays an important role in the ecology of small organisms, including fish eggs and larvae, phytoplankton, and zooplankton. In many cases, the turbulence of a waterbody directly affects the behavior of aquatic organisms, including fish, with respect to swimming speed (Lupandin 2005), location preference with a waterbody (Liao 2007), predator-prey interactions (Caparroy et al. 1998; MacKenzie and Kiorboe 2000), recruitment rates (MacKenzie 2000; Mullineaux and Garland 1993), and the metabolic costs of locomotion (Enders et al. 2003). The sum of these effects may result in changes to the food web or the location of used habitat, and thereby substantially alter the aquatic environment.

Climate change is predicted to have variable effects on future river discharge in different regions of the United States, with some rivers expected to have large increases in flood flows while other basins will experience water stress. For example, Palmer et al. (2008) predict that mean annual river discharge is expected to increase by about 20 percent in the Potomac and Hudson River basins but to decrease by about 20 percent in Oregon's Klamath River and California's Sacramento River. Thus, the adverse effects of flow alteration may increase or decrease over longer periods for larger rivers, depending on their national location.

4.3 Water Quality

Water quality is a major stressor of aquatic biota and habitats. Degraded surface water and sediment contaminants reflect current and historical industrial, agricultural and residential land use as well as discharges from wastewater treatment plants. Poor water quality can limit the numbers, composition, and distribution of fish and invertebrates; reduce spawning effort and growth rates; select for pollution-tolerant species; cause periodic fishkills; or result in adverse effects to piscivorous wildlife. Many T&E species are particularly vulnerable to degraded water quality.

CWA Section 303(d) listings inventory, on a state-by-state basis, the locations of impaired waters not meeting designated uses and the known or suspected source(s) of impairment. EPA's analysis of facilities known to be subject to Section 316(b) demonstrate that the majority of facilities, including 71 percent of generators and 79 percent of sampled manufacturing facilities, are within two miles of a 303(d)-listed waterbody (U.S. EPA 2011). The various impairments are due to chemical, physical, and biological factors, categorized into biological stressors, nutrients, organic enrichment/loading, bioaccumulation, toxics, unknown causes, and general water quality impairment.

The most common causes of impairment for waterbodies serving as 316(b) source waters include polychlorinated biphenyls (PCBs), pathogens, mercury, as well as organic enrichment/oxygen depletion and nutrients (U.S. EPA 2011). The entire universe of all 303(d) water quality impairment causes is much too diverse to cover fully in this section. However, below we discuss some of the more common and important physico-chemical impairments in aquatic environment where 316(b) facilities potentially draw cooling water from and discharge to 303(d) listed waters.

- An oversupply of nutrients can result in excessive algal production, reduced light clarity, more frequent outbreaks of harmful algal blooms (HABs), high internal loads of biochemical oxygen demand (BOD), and spatial and temporally variable DO levels. In addition, eutrophication can reduce or eliminate habitat-formers such as coral reefs and submerged aquatic vegetation (SAV), and create other adverse ecological effects. Thermal discharges from 316(b) facilities can increase receiving water temperature, which may favor formation of blue-green algal blooms.
- Low levels of dissolved oxygen (hypoxia) may be present in many estuaries and coastal waters (Interagency Working Group 2010), in the hypolimnion of eutrophic lakes, and in areas of high organic loading (e.g., below wastewater treatment plant outfalls). DO concentrations may be further decreased in or downstream of thermal plumes arising from cooling water return discharges from 316(b) facilities. Low DO can limit the distribution of fish and macroinvertebrates, reduce growth rates, and alter nutrient and carbon recycling.
- Persistent, bioaccumulative and toxic substances (PBTs) such as mercury or PCBs may be present in waterbodies near 316(b) facilities, due to atmospheric deposition of local air emissions or from historical uses of PCBs in electrical transformer units, in addition to other urban or industrial sources. These PBTs can impair water uses by regulatory restrictions or advisories regarding acceptable ingestion of fish consumption (see below), as well as affecting higher trophic level predators in the food chain.
- Toxic pollutants, such as metals, polycyclic aromatic hydrocarbons (PAHs), pesticides, biofouling chemicals, or chlorine may be present in the discharge of 316(b) facilities. This could lead to local extirpation of sensitive species, or to greatly altered biological

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communities due to chronic impacts on viability, growth, reproduction, and resistance to other stressors.

In addition to 303(d) listings, many of the waterbodies in which CWIS are located are subject to fish advisories. Fish advisories are issued by States to protect their citizens from the risk of eating contaminated fish or wildlife (USEPA 2009). Fish advisories are recommendations and do not carry regulatory authority, but they indicate the presence of bioaccumulative chemicals which may pose risk for humans and piscivorous wildlife and which may also interfere with reproduction and survival of lower taxa as well.

EPA's 2008 National Listing of Fish Advisories (NLFA) database indicates that 97% of the advisories are due (in order of importance) to: mercury, PCBs, chlordane, dioxins, and DDT (USEPA 2009). Fish advisories have been issued for 39 percent of the total river miles (approximately 1.4 million river miles) and 100 percent of the Great Lakes and connecting waterways (USEPA 2009). Fish advisories have been steadily increasing over the NLFA period of record (1993-2008), but these increases are interpreted to reflect the increase in the number of waterbodies being monitored by States and advances in analytical methods rather than in increasing levels of these problematic chemicals.

The water quality impacts arising from the combination of operations and/or discharges of 316(b) facilities and other anthropogenic sources (as indicated by the presence of widespread fish advisories) could result in highly degraded or altered aquatic habitats. Threatened and endangered species impacted by poor water quality may be further affected by IM&E.

4.4 Thermal Pollution

One byproduct of once-through cooling water systems is a release of a heated effluent. The discharge of heat is addressed in NPDES permits by either water quality-based effluent limitations or technology-based effluent limitations required under sections 301 or 306 of the CWA. Most of the facilities subject to 316(b) I&E mortality concerns have also been required to address the impact of thermal pollution in the discharge-receiving waters (Abt Associates 2010b).

Thermal discharges affect aquatic organisms by elevating water temperatures or altering seasonal patterns of temperature change. Temperature is considered a master environmental variable for aquatic ecosystems, affecting virtually all biota and biologically mediated processes, chemical reactions, as well as structuring the physical environment of the water column. There is a well-established scientific literature cataloging the impacts of elevated or variable temperature on a wide spectrum of aquatic life, including numerous species-specific determinations of thermal tolerance limits for growth, survival, reproduction and behavior (e.g., Beiting et al. 2000; Leffler 1972; McMahon 1975). Overall, an unacceptable rise or variation in the water temperature could directly impact the T&E species listed in Table 2-X.

Thermal pollution has long been recognized as having effects upon the structure and function of ecosystems (Abt Associates 2009a). Numerous studies have shown that thermal discharges may substantially alter the structure of the aquatic community by modifying photosynthetic (Bulthuis 1987; Chuang et al. 2009; Martinez-Arroyo et al. 2000; Poornima et al. 2005), metabolic, and growth rates (Leffler 1972), and reducing levels of DO. Thermal pollution may also alter the location and timing of fish behavior including spawning (Bartholow et al. 2004), aggregation, and migration (USEPA 2002b), and may result in thermal shock-induced mortality for some species (Ash et al.

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1974; Deacutis 1978; Smythe and Sawyko 2000). Thus, thermal pollution is likely to alter the ecological services provided by ecosystems surrounding facilities returning heated cooling water into nearby waterbodies. Any one of these factors could indirectly affect the listed species in **Table 2-2**.

In addition to the species-specific impacts, investigators have assessed the effects of thermal discharges on the structure of species assemblages and communities, as well as secondary ecosystem function and services. Thermal discharges may have both detrimental and beneficial effects. For example, the bleaching and destruction of coral reefs by elevated thermal discharges is well documented, but researchers studying the Moss Landing facility (Coles (1984) in the Moss Landing study found that thermal effluent may have some beneficial effects, such as enhancing new coral regrowth or providing preferred water temperatures for avian birds and mammals.

Adverse temperature effects may also be more pronounced in aquatic ecosystems that are already subject to other environmental stressors such as high biochemical oxygen demand (BOD) levels, sediment contamination, or pathogens. Thermal discharges may have indirect effects on fish and other vertebrate populations through increasing pathogen growth and infection rates. Langford (1990) reviewed several studies on disease incidence and temperature, and while he found no simple, causal relationship between the disease and temperature, he did note that warmer water enhances the growth rates and survival of pathogens, and that infection rates tended to be lower in cooler waters.

The magnitude of thermal effects on ecosystem services is related to facility-specific factors, including the volume of the waterbody from which cooling water is withdrawn and returned, other heat loads, the rate of water exchange, the presence of nearby refugia, and the assemblage of nearby fish species. In addition to reducing total I&E mortality, cooling towers reduce thermal pollution. Consequently, the installation of closed-system cooling towers could have geographically variable effects on ecosystems, ranging from comprehensive changes in community structure and habitat type (Schiel et al. 2004), to localized changes in the relative proportion of species adapted to warm and cold water (Millstone Environmental Laboratory 2009).

4.5 Cumulative Impacts of Multiple CWIS

In addition to the environmental stressor created by regulated facilities' CWIS and discharge described in Sections 4.1 – 4.4, these effects may be magnified when two or more facilities are located nearby. If listed T&E species or critical habitats are co-located near clustered facilities, the magnitude of potential effect will be greater.

Cumulative impacts of CWISs are likely to occur if multiple facilities are located in close proximity such that they impinge or entrain aquatic organisms within the same source waterbody, watershed system, or along a migratory pathway of a specific species (e.g., striped bass in the Hudson River) (USEPA 2004c). The cumulative impacts of CWISs may be exacerbated by the presence of other anthropogenic stressors discussed above.

EPA analyses suggest that approximately 20 percent of all in-scope facilities are located on waterbodies with multiple CWISs (USEPA 2004c). Inspection of geographic locations of 316(b) facilities (approximated by CWIS latitude and longitude) indicates that facilities in inland settings are clustered around rivers to a greater extent than marine and estuarine facilities.

The cumulative impact of clustered facilities may be significant, due to the concentrated I&E mortality, combined intake flows, and the potential for other impacts such as thermal discharges. It

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should also be noted that power generation demand and cooling intake water volume is typically at its annual maximum during mid-late summer, which is also a period of seasonal low flows and highest in-stream temperatures. The effect of cumulative impacts may be greater in inland or Great Lakes waters due to the following factors: (1) the majority of national AIF is associated with freshwater CWISs; freshwater plants use a greater relative volume of available fish habitat than marine or estuarine counterparts; and seasonal variation in power demand and river flow may increase entrainment potential during low-flow periods of the year (NETL 2009).

Although low flows are traditionally in late summer to early fall, drought conditions and manipulations of water levels may lead to low flow during other periods. This may be locally significant if periods of low flow overlap with seasonal concentrations of eggs, developing YOY, and migrating juveniles.

4.6 Invasive Species

Non-indigenous, invasive species (NIS) are a significant and increasingly prevalent stressor in both freshwater and marine environments (Cohen and Carlton 1998; Ruiz et al. 1999). Approximately 300 NIS are established in marine and estuarine habitats of the continental U.S., and that rate of invasion is rapidly increasing (Ruiz et al. 2000). Aquatic NIS are taxonomically diverse and include: plants, fish, crabs, snails, clams, mussels, bryozoans, and nudibranchs. Analysis of freshwater NIS indicated that between 10-15 percent are nuisance species with undesirable effects (Ruiz et al. 1999). The adverse implications of marine and coastal NIS are generally not as well-characterized as those in freshwater settings.

Interactions between NIS and other anthropogenic stressors are likely to affect the colonization and distribution of native species subject to CWIS impacts. Thermal discharges from 316(b) facilities may extend the seasonal duration of non-resident organisms, allowing transient summer species to become permanently established in geographic areas beyond their historical range. For example, in Mount Hope Bay, increased water temperature attributed to the Brayton Point Station facility was correlated with an increase in abundance of the predacious ctenophore *Mnemiopsis leidyi*, as well as increased incidence of overwintering in the Bay for this formerly seasonal resident (U.S. EPA 2002).

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5. Effects of the Proposed Action

This section evaluates the potential effect of the proposed action on ESA-listed species and designated critical habitats. This evaluation is based on comparison of the baseline IM&E with that estimated under the final rule (Section 5.1).

While implementation of the final rule will reduce AEI to some T&E species, it will not completely eliminate all effects to all species and critical habitats. Therefore, while the proposed action does show some quantitative reduction in I&E for select groups (see 5.1) in and of itself, it will not result in full compliance with the ESA.

5.1 Effect of the Proposed Action on IM&E of ESA-Listed Species

EPA attempted to estimate the changes in mortality as a result of regulation for all T&E species with documented and quantified losses at CWIS. However, it was not possible to locate or calculate key components of the analysis for all relevant species. Among other reasons, IM&E data were qualitative for some T&E species, and unsuitable to estimate population changes. For other species, data could not be reliably extrapolated to the T&E population (due to insufficient life history data). Nonetheless, EPA was able to obtain sufficient data to obtain estimates for two categories of T&E species: a subset of T&E fish species in the inland region, and loggerhead sea turtles. The potential decrease in T&E mortality for the two T&E species categories are discussed below.

5.1.1 Changes in IM&E for inland region T&E fish stocks due to the proposed action

To estimate total baseline losses due to IM&E, EPA used the equivalent adult model (EAM) to estimate AIEs losses for Pallid Sturgeon and Topeka Shiner (EPA 2011).²² The choice of facilities used to extrapolate IM&E from model facilities was based on species' historic ranges and current distributions. In addition to baseline estimates of IM&E for Pallid Sturgeon and Topeka Shiner, EPA calculated reductions in IM&E the final rule and Proposal Options 2 and 4 (Table 5-1).

²² IM&E of Topka Shiner and Pallid Sturgeon losses were observed at nine and two model facilities, respectively.

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EPA notes that the estimated quantitative benefits should be considered only as a measure of the rule's potential for positive impacts on T&E species. Because the age of the data used in these projections (much of it from the 1970s), baseline losses and benefits should not be considered to be an accurate representation of population impacts. Notably, however, the benefits relative to baseline losses (e.g., percent saved) are likely to be reasonable estimates of benefits for these species.

5.1.2 Changes in IM&E for sea turtles due to the proposed action

Power plants are known to entrain and impinge all six species of sea turtles found in U.S. waters (Norem 2005), with more than 730 occurrences of overlap between species ranges and CWISs. Incidences of mortality have been reported at facilities in California, Texas, Florida, South Carolina, North Carolina, and New Jersey (National Research Council 1990; Plotkin 1995). These facilities span a wide range of intake flows (fewer than 30 to more than 1,400 million gallons per day average intake flow), suggesting that sea turtle mortality or injury is not limited to large intakes. Although EPA has identified quantitative reports from 13 few power stations, high-quality data is available from only one source, the St. Lucie Nuclear Power Plant, at Hutchinson Island, FL, where annual capture rates range from 350 to 1,000 turtles (NMFS 2009; Table 5-2). Despite the fact that mortality rates due to entrainment are estimated to be less than 2 percent, approximately 85 percent of entrained organisms show evidence of injury as a result of entrainment (Norem 2005). As such, true mortality rates from CWISs may be higher than reported, particularly for individuals who are recaptured repeatedly (37 percent of green and 13 percent of loggerhead sea turtles entrained between May and December 2000 were recaptured individuals) (Norem 2005). Even if no mortality occurs, the Services consider injury to a T&E species as equivalent to take, a position reflected on the incidental take permit granted to St. Lucie (and which is under consultation).

Although the magnitude of IM&E is believed to be small relative to fishing-related mortality (incidental take permits for generating facilities equal approximately 10 turtles per year, while permits for fishing activities exceed 3,000 per year), the cumulative impact of IM&E is unclear. The only study presenting a quantitative estimate of annual IM&E estimated mortality rates to be between 5 and 50 individuals per year (Plotkin 1995). Moreover, this study did not extrapolate to the universe of all facilities whose CWIS overlap turtle habitat. Consequently, EPA does not believe sufficient data exist to estimate baseline sea turtle mortality due to entrainment and impingement at regional or national scales. However, due to lower population sizes, long life-span, and high reproductive potential of adult turtles (Crouse et al. 1987), EPA believes the effect of 316(b) regulation is likely to have a small effect on the long-term viability of turtle populations.

5.1.3 Changes in IM&E for freshwater mussels due to the proposed action

Changes in impingement have less direct effect on T&E freshwater mussels, as it is entrainment of the eggs and larval stages that constitutes the greatest source of loss for these species. EPA could not estimate the amount of reduction in entrainment since under the proposed rule each facility is to conduct a site-specific investigation. However, the reliance of freshwater mussels on selected or unique fish species as temporary host for critical mussel life stages suggest that reduction of overall fish loss to proposed impingement requirement, together with the general improvement in the aquatic habitat, could have indirect beneficial effects for mussel due to increased numbers of host fish.

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Table 5-2: Annual Estimates of Non-Lethal Take, and Turtles Recovered at 13 Generating Stations										
Facility	State	Data Year(s)	#Years	Non-Lethal Take (Turtles Recovered: Causal and Non-Causal Mortality)						Comments
				Loggerhead	Green	Leatherback	Hawksbill	Kemp's Ridley	Olive Ridley	
Brunswick	NC	2003-2012	10	4.8 (1.2)	0.9 (0.5)	0 (0)	0 (0)	2.3 (0.4)	0 (0)	NMFS BO from 2000, ITS: Annual take may not exceed 50 turtles in any combination released alive; lethal take: 6 loggerhead, 2 Kemp's Ridley, 3 green
Crystal River	FL	2002-2011	10	0.7 (0.1)	4 (0.3)	0 (0)	0 (0)	3.1 (0.5)	0 (0)	2002 NMFS Biological Opinion: ITS: annual take of 75 captures in any combination of species, 3 injured or killed, any combination of species
St. Lucie	FL	2006-2011	6	316.5 (1.67)	248.16 (3.66)	0.83 (0)	2.33 (0)	2 (0)	0 (0)	Only data following realignment of CWS to minimize turtle capture (post-2006). NMFS BO from 2001: ITS: Annually, 1000 captured any combination of species; 1% of green/loggerhead captures are injured or killed, >2 Kemp's Ridley injured/killed, 1 hawksbill or leatherback injured/killed every 2 years. Remediation began in 2006, ongoing.
Salem	NJ	1993-2010	18	0.17 (0.22)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	Only data following initiation of turtle avoidance techniques in 1993. NMFS BO from 1999: ITS: Annual take of loggerhead, 30 total, 5 lethal, green 5 total, 2 lethal, Kemp's Ridley 5 total, 1 lethal.
Oyster Creek	NJ	1992-2011	20	0.5 (0.1)	0.4 (0.05)	0 (0)	0 (0)	1.8 (1)	0 (0)	NMFS BO from 2009: ITS: Annual take 3 turtles total, including maximum 3 loggerheads, 1 green. Up to 3 turtles dead, including maximum 1 green, 1 loggerhead.
San Onofre	CA	2003-2011	9	0 (0)	1 (0.33)	0 (0)	0 (0)	0 (0)	0 (0)	2012 Excluded because of plant shutdown. NMFS BO from 2006: ITS for 2007 - 2022: Green turtles 15, inc 3 mortality, 1 serious injury, Leatherback 3 including 1 mortality, 1 serious injury, Loggerhead 3 including 1 mortality, 1 serious injury, Olive Ridley 3 including 1 mortality, 1 serious injury.
Diablo Canyon	CA	2006-2012	7	0 (0)	0.57 (0)	0 (0)	0 (0)	0 (0)	0 (0)	NMFS BO from 2006: ITS for 2007 - 2022: Green turtles 15, inc 3 mortality, 1 serious injury, Leatherback 3 including 1 mortality, 1 serious injury, Loggerhead 3 including 1 mortality, 1 serious injury, Olive Ridley 3 including 1 mortality, 1 serious injury.
El Segundo	CA	1982-2006	25	0.04 (0)	0.04 (0.04)	0 (0)	0 (0)	0 (0)	0 (0)	Incidental Take Permit Applied for in 2008, no BO or ITS found.
Scattergood	CA	1982-2006	25	0 (0)	0.12 (0)	0 (0)	0 (0)	0 (0)	0 (0)	Incidental Take Permit Applied for in 2008, no BO or ITS found.
Encina	CA	1982-2006	25	0 (0)	0.08 (0.04)	0 (0)	0 (0)	0 (0)	0 (0)	Incidental Take Permit Applied for in 2008, no BO or ITS found.
Huntington Beach	CA	1982-2006	25	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	Incidental Take Permit Applied for in 2008, no BO or ITS found.
Ormond Beach	CA	1982-2006	25	0 (0)	0.04 (0)	0 (0)	0 (0)	0 (0)	0 (0)	Incidental Take Permit Applied for in 2008, no BO or ITS found.
Redondo Beach	CA	1982-2006	25	0 (0)	0.08 (0.04)	0 (0)	0 (0)	0 (0)	0 (0)	Incidental Take Permit Applied for in 2008, no BO or ITS found.

5.2 Proposed Action Effect on Aquatic Habitat

In addition to the direct effects to T&E species resulting from reduced IM&E due to implementation of the final rule (Section 5.1), indirect effects may occur due to improved condition of the aquatic habitat. As described in Sections 4, potential adverse effects of regulated facilities on the aquatic ecosystem are not restricted to impingement and entrainment. Facilities can also affect the aquatic ecosystem through flow alteration, chemical discharges, thermal discharges, and habitat reductions.

As a consequence of the final rule and changes in facility CWIS structural or operational modifications, the magnitude of facility-related stressors is likely to be reduced and the quality of adjacent aquatic habitats improved. Improved aquatic habitat would provide indirect beneficial effects for many T&E species. For example, reduced IM may lead to increases in food availability for piscivorous fish, an increase in forage fish populations which may stabilize the local ecosystem and result in healthier populations of fish species parasitized by freshwater mussel species.

The probability and magnitude of these improvements would be site-specific and may be difficult to measure or isolate from other stressor sources for the waterbody, particularly for those waterbodies influenced by multiple anthropogenic stressors and/or containing multiple regulated facilities. It is likely that the proposed action will result in a neutral (no change) or slight beneficial effect on T&E species in many locations. No realistic estimate of benefits could be made with regard to changes in T&E populations. However, it is possible to infer that the indirect effects of the final rule would not increase AEI to ESA-listed species.

6. Cumulative Effects

Cumulative effects include the effects of future federal and non-federal actions on ESA listed species or their critical habitat that are reasonably certain to occur in the action area considered in this BE.

6.1 Potential Federal actions reasonably certain to occur in the foreseeable future

EPA is not aware of any impending or proposed federal actions or programs that would impact the proposed action of this BE over the next five years. However, given the large action area (nationwide) and the many types of aquatic systems covered under the proposed action, it is likely that other federal agencies may have impending activities. Federal projects that may affect hydrology or geomorphology of rivers (e.g., dams, flood protection structures) may be planned by agencies such as the Army Corps of Engineers or the Bureau of Land Management. If implemented, the actions of other agencies may interact with the proposed action described in this BE. In such cases, however, the agency proposing any future action must address ESA requirements as well. Consequently, any future actions are unlikely to affect the findings of this BE.

The implementation of the proposed action does not authorize any new activities or increased discharge of pollutants that would increase effects of ESA listed species. In fact, this action is likely to reduce or minimize the potential effects of CWIS-related IM&E on ESA-listed species whose habitat overlap with the withdrawal and discharge zones of these facilities. Thus, EPA believes that there are no cumulative AEI related to this action due to foreseeable federal actions, but it is acknowledged that residual effects to T&E species will persist following rule implementation.

6.2 Potential non-Federal actions reasonably certain to occur in the foreseeable future

ESA regulations require the action agency to evaluate all interdependent actions (actions having no independent utility apart from the proposed action) and interrelated actions (actions that are part of a larger action and depend on the larger action for their justification). As described in Section 4.0, there are existing anthropogenic stressors currently impacting T&E species. In addition, there are national-scale, non-federal actions likely to occur in the foreseeable future. These include watershed development, increased water use, and climate change.

6.2.1 Watershed development

Since World War II, socio-economic drivers of US urbanization, including population and per-capita income levels, have increased substantially. The US population is projected to grow by more than 120 million (40%) by 2050. Land use conversion and watershed development associated with this growth is projected to exceed 20 million hectares (Alig, R. 2010). According to the USDA (2000), the per capita developed land use (acres per person, a classical measure of urban sprawl) has increased in the United States between the years of 1982 and 1997 from about 0.43 to about 0.49 acres per person.

Many different metrics can be used to measure the rate of urbanization in the United States, including the number of housing starts and permits and the level of new U.S. development. The latter is tracked by the U.S. Department of Agriculture's (USDA) National Resources Inventory (USDA, 2000). This inventory, conducted every five years, covers all non-federal lands in the United States (about 75

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percent of the total land area of the USA). The inventory uses land-use information from roughly 800,000 statistically selected locations. From 1992 to 1997, approximately 2.2 million acres per year were converted from non-developed to developed status.

The literature provides substantial evidence that storm water runoff from construction sites and urban areas can adversely affect aquatic systems. Runoff from these areas can include litter, chemicals, metals, nutrients, pesticides, bacteria, and sediment. In addition to contributing pollutants, construction sites and urban areas contribute to increased flows to receiving water bodies. The effects of pollutants and increased flows can be detrimental to aquatic organisms and habitat as well as to human health.

When sediment falls out of suspension in the water column it accumulates on stream- and riverbeds. Many benthic organisms depend on certain habitat conditions for survival, such as small crevices between rocks for protection of eggs and fry or hard substrates for attachment. When sediment covers streambeds, this critical habitat can be degraded or destroyed. Sedimentation can smother organisms such as fish eggs and fry, shellfish, and insects. In addition, many benthic organisms are filter feeders and sedimentation can interfere with their ability to feed.

As part of an extensive literature review, Makepeace et al. (1995) found that turbid water can be detrimental to aquatic biota. The authors found that total suspended solid (TSS) concentration between 25 and 100 mg/L “could reduce a river’s primary biological productivity by 13% to 50%. Turbidity has also been found to affect the ability of organisms dependent on vision to feed. For example, in a controlled experiment, Gardner (1981) found that increases in turbidity (60 to 150 nephelometric turbidity units [NTU]) reduced feeding rates of bluegills by 50%. The range in turbidity studied encompasses that typical of North Carolina waters. However, stream turbidity in disturbed watersheds could likely exceed these levels (Gardner 1981). Organisms that rely on vision for courtship may also be affected (Clark et al. 1985). Additionally, turbidity can be abrasive to fish and shellfish, clogging gills and affecting mortality (Marsh 1993).

Storm water contains a multitude of pollutants including metals, organics, pesticides, inorganic pollutants, and oil and grease. These pollutants may have chronic or acute effects on aquatic organisms. Furthermore, these pollutants can be bound to sediment and accumulate on streambeds, leading to bioaccumulation. Field and Pitt (1990) reviewed a three-year monitoring study of a creek in San Jose, California and found that organics and heavy metals in the water column and sediments were likely responsible for the adverse biological conditions. For example, they found four to 60 times greater concentrations of sulfur, lead, and arsenic in urban sediments than in nonurban sediments. In addition, Field and Pitt found evidence of bioaccumulation of lead and zinc in many samples of algae, crayfish, and cattails. The biological conditions of the urban creek included a reduction in native fish species, decreased diversity and abundance of aquatic taxa, and an abundance of pollutant tolerant species of fish and benthic organisms. Finally, Field and Pitt (1990) indicate that the long-term impacts of such pollutants may be more important than the short term impacts. They attribute the long term impacts to toxic sediments and the inability of organisms to tolerate repeated exposure to toxic contaminants and high flow rates.

Nutrients such as phosphorous and nitrogen are often used as fertilizer and can be contained in storm water runoff from urban areas and construction sites. When a water body receives an excessive amount of these nutrients, growth of algae and aquatic plants is stimulated. Like all plants, algae require oxygen and when abundant, can decrease the dissolved oxygen available for other organisms.

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In addition, when algae die they sink to the bottom of water bodies, where bacteria decompose the algae, depleting dissolved oxygen supplies (US EPA 1995). The overabundance of nutrients and resulting loss of oxygen, a condition known as eutrophication, leads to fish kills and mass mortality of benthic organisms (Water Environment Federation and the American Society of Civil Engineers 1992).

6.2.2 Increased Water Use

Another consequence of increasing population and economic growth in the U.S. is an expected increase in water demands. Water demands are measured both in terms of water withdrawals and consumptive use, with each having different effects on available water resources. Water withdrawals and consumptive use are different for different economic sectors and vary geographically. During the 50-year period from 1950 to 2000, estimated total water withdrawals in the U.S. have increased more than two fold—from 180 to 408 BGD. Consumptive water use currently represents approximately one-fourth of total withdrawals. This water use also increased during the 1950s to 2000s period but at a slightly slower pace because the relative share of highly consumptive irrigation has decreased.

Based on historical trends, forecasts of future demands (Dziegielewski et al. 2003; Brown 2000) indicate a growth of 7 to 9 percent in total water withdrawals in the coming decades (Table 6-1). However, these increases will not be equally shared by industrial, agricultural and thermoelectric water demands. As shown in Table 6-1, thermoelectric water use (i.e., cooling water) represented the large cause of water withdrawals (47 percent) in 1995 and it, along with industrial use, are expected to increase in the coming years.

Table 6-1: Comparisons of 1995 Withdrawals and 2040 Predictions			
Water Use Category	Estimated 1995 Withdrawals (bgd)	1995-2040 Change, bgd	
		Dziegielewski et al. (2003)	Brown, (2000)
Thermoelectric	190	26	11
Irrigation	134	-24	-4
Industrial	29	6	2
Domestic	49	30	13
Total	402	38	24
<i>Source: Dziegielewski et al. 2003; Brown, 2000.</i>			

Further, these types of withdrawals tend to be from large rivers or lakes and thus directly affect water quantity for aquatic habitats and communities. Notably, the proposed action is unlikely to increase consumptive water use. In contrast, while irrigation demand is projected to decrease, the resulting increase in water availability would be realized at a watershed scale. Reductions in irrigation demand are expected to result in increased water availability for large rivers (e.g., greater surface runoff or, groundwater recharge), but it is not certain what fraction of the deferred irrigation volume would actually flow to these waterbodies.

Impacts of increased water demand may include reduced depth, areal coverage, and habitat quality for many aquatic communities and aquatic T&E species. It is notable that that power generation demand and cooling intake water volume is typically at its annual maximum during mid-late summer, which is also a period of seasonal low flows and highest in-stream temperatures.

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The impact of water demand may be greater on aquatic communities and T&E species in the Inland and/or Great Lakes Regions due to the following factors: (1) the majority of national actual intake flow (AIF) is associated with freshwater CWISs; (2) freshwater plants use a greater relative volume of available fish habitat than marine or estuarine counterparts; and seasonal variation in power demand and river flow may increase entrainment potential during low-flow periods of the year (NETL 2009).

Although low flows are traditionally in late summer to early fall, drought conditions and manipulations of water levels may lead to low flow during other periods. This may be locally significant if periods of low flow overlap with seasonal concentrations of eggs, developing young-of-year, and migrating juveniles.

Anthropogenic water demands are also likely to be exacerbated by climate change (see below), leading to greater hydrological variability with increased probability of drought in many regions.

6.2.3 Climate Change

Recently published assessments and other reports reinforce the findings that climate change has significant implications for water resources and water programs (U.S EPA 2012). Climate change is expected to result in warmer water temperatures, which may lead to increases in water pollution problems like hypoxia and changes in aquatic biological composition. Climate change is also expected to increase the impacts on water infrastructure and aquatic systems due to more extreme weather events. Heavy precipitation events will increase flood risk, expand flood hazard areas, increase the variability of stream flow (i.e., higher high-flows and lower low-flows), increase the velocity of water during high-flow periods, and increase erosion. These changes will have adverse effects on water quality and aquatic ecosystem health.

Precipitation patterns are likely to change in different parts of the country and increased water loss due to evaporation as a result of warmer temperatures will result in changes to the availability of water for drinking and for use in agriculture, industry, and energy production. In other areas, sea level rise and saltwater intrusion will have the same effect. Warmer air temperatures may also result in increased demands on community water supplies, and the water needs for agriculture, industry, and energy production are likely to increase.

Rising sea levels will move ocean and estuarine shorelines by inundating lowlands, displacing wetlands, and altering the tidal range in rivers and bays. Changing water flow to lakes and streams increased evaporation, and changed precipitation in some areas will affect the size of wetlands and lakes. Water levels in the Great Lakes are expected to fall.

As waters become warmer, the aquatic life they support may be replaced by other species better adapted to the warmer water (i.e., coldwater fish will be replaced by warmwater fish). This process, however, is likely to occur at an uneven pace, disrupting aquatic system health and allowing nonindigenous and/or invasive species to become established. In the long term (i.e., 50 years), warmer water and changing flows may result in significant deterioration of aquatic ecosystem health in some areas.

Most areas of the United States will see several water-related impacts, but coastal areas are likely to see multiple impacts associated with climate change (e.g., sea level rise, increased damage from floods and storms, coastal erosion, changes in drinking water supplies, increasing temperature),

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acidification (e.g., decreases in pH, decreases in carbonate ion availability for calcifying organisms, changes in fish behavior), and nitrogen and phosphorus pollution, which could result in more profound consequences to water resources and ecosystem services. These overlapping impacts make protecting water resources in coastal areas especially challenging.

6.2.4 Summary of Cumulative Effect of Non-federal Actions

The proposed action does not authorize any new activities or increased discharge of pollutants that would increase the level of AEI to ESA-listed species. While non-federal reasonably foreseeable actions (watershed development, water demand and climate change) have the potential to adversely impact ESA-listed species and designated habitat, the implementation of the final rule would not increase cumulative risk or impacts. Thus, EPA believes that there are no cumulative AEI related to this action due to foreseeable federal or non-federal actions, but it is acknowledged that there are would still be residual effects to T&E species which would persisting after the implementation. .

7. Conclusions

EPA conducted this BE to assess the potential effects of the proposed action (i.e., implementation of the final rule) on ESA-listed species and designated critical habitats associated with regulated facilities. This section reviews the results of the effect determination for individual species and critical habitat, assesses the nature of those effects (as applicable), and provides a conclusion regarding the need for further formal consultation with the Services.

7.1 Effects determination for listed species and designated critical habitats

EPA reviewed the effect of the proposed action on 266 potentially-affected species and DPS identified in Section 2.4. **Table 7-1** lists the individual T&E species organized by functional groups including: amphibians, birds, clams, coral, fish, reptile and mammal. This table identifies the total number of facilities whose CWIS are found within the habitat or critical habitat of these T&E species. A similar table, grouping potentially affected species by facility, can be found in the Appendix.

A review of Table 7-1 indicates that the potential for effects arising from the proposed action is not equally distributed among listed species or functional groups. Sea turtles are the most uniformly affected as a group, due to their ubiquitous habitat ranges which overlap with the majority of coastal facilities. For anadromous fish, the shortnose sturgeon and pallid sturgeon have the greatest potential for effects due to reduced IM&E, based on the large proportion of non-compliant facilities with which these species overlap. Freshwater mussels are highly variable in their potential for effects, with some species having a large proportion of non-compliant facilities and others rarely, if ever, affected. These differences appear to be due to the broad distribution of some species throughout major river drainages, while others are restricted to smaller geographic areas. Similarly, freshwater fish generally show fewer total interacting facilities, indicating that their habitat distribution is limited.

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Table 7-1: Number of Facilities Overlapping T&E or Critical Habitat Areas, by T&E Species

Major Taxonomic Groupings	Latin Name	Common Name	Facility Overlaps	Critical Habitat Overlaps
Amphibian	<i>Bufo baxteri</i> (=hemiophrys)	Wyoming Toad	9	0
Amphibian	<i>Cryptobranchus alleganiensis bishopi</i>	Ozark Hellbender	12	0
Amphibian	<i>Rana draytonii</i>	California Red-Legged Frog	55	1
Bird	<i>Brachyramphus marmoratus</i>	Marbled Murrelet	67	0
Bird	<i>Charadrius alexandrinus nivosus</i>	Western Snowy Plover	69	9
Bird	<i>Charadrius melodus</i>	Piping Plover	457	0
Bird	<i>Grus americana</i>	Whooping Crane	31	1
Bird	<i>Grus canadensis pulla</i>	Mississippi Sandhill Crane	15	0
Bird	<i>Mycteria americana</i>	Wood Stork	632	0
Bird	<i>Numenius borealis</i>	Eskimo Curlew	3	0
Bird	<i>Phoebastria</i> (=Diomedea) <i>albatrus</i>	Short-Tailed Albatross	175	0
Bird	<i>Rallus longirostris levipes</i>	Light-Footed Clapper Rail	6	0
Bird	<i>Rallus longirostris obsoletus</i>	California Clapper Rail	20	0
Bird	<i>Rallus longirostris yumanensis</i>	Yuma Clapper Rail	2	0
Bird	<i>Rostrhamus sociabilis plumbeus</i>	Everglade Snail Kite	34	0
Bird	<i>Sterna antillarum</i>	Least Tern	2011	0
Bird	<i>Sterna antillarum browni</i>	California Least Tern	38	0
Bird	<i>Sterna dougallii dougallii</i>	Roseate Tern	22	0
Clams	<i>Alasmidonta atropurpurea</i>	Cumberland Elktoe	17	0
Clams	<i>Alasmidonta heterodon</i>	Dwarf Wedgemussel	387	0
Clams	<i>Alasmidonta raveneliana</i>	Appalachian Elktoe	18	0
Clams	<i>Amblema neislerii</i>	Fat (Mussel) Three-Ridge	9	5
Clams	<i>Arkansia wheeleri</i>	Ouachita Rock Pocketbook	20	0
Clams	<i>Cumberlandia monodonta</i>	Spectaclecase (Mussel)	354	0
Clams	<i>Cyprogenia stegaria</i>	Fanshell	551	0
Clams	<i>Dromus dromas</i>	Dromed ary Pearlymussel	93	0
Clams	<i>Elliptio chipolaensis</i>	Chipola Slabshell	10	5
Clams	<i>Elliptio spinosa</i>	Altamaha Spinymussel	5	0
Clams	<i>Elliptio steinstansana</i>	Tar River Spinymussel	31	0
Clams	<i>Elliptioideus sloatianus</i>	Purple (Mussel) Bankclimber	27	5
Clams	<i>Epioblasma brevidens</i>	Cumberlandian Combshell	99	1
Clams	<i>Epioblasma capsaeformis</i>	Oyster Mussel	112	1
Clams	<i>Epioblasma florentina curtisii</i>	Curtis Pearlymussel	8	0
Clams	<i>Epioblasma florentina florentina</i>	Yellow (Pearlymussel) Blossom	269	0

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Major Taxonomic Groupings	Latin Name	Common Name	Facility Overlaps	Critical Habitat Overlaps
Clams	<i>Epioblasma florentina walkeri</i> (=E. walkeri)	Tan Riffleshell	50	0
Clams	<i>Epioblasma metastrata</i>	Upland Combshell	38	0
Clams	<i>Epioblasma obliquata obliquata</i>	Purple Cat's Paw (=Purple Cat's Paw Pearlymussel)	109	0
Clams	<i>Epioblasma obliquata perobliqua</i>	White (Pearlymussel) Catpaw	102	0
Clams	<i>Epioblasma othcaloogensis</i>	Southern Acornshell	28	0
Clams	<i>Epioblasma penita</i>	Southern Combshell	58	0
Clams	<i>Epioblasma torulosa gubernaculum</i>	Green (Pearlymussel) Blossom	16	0
Clams	<i>Epioblasma torulosa rangiana</i>	Northern Riffleshell	226	0
Clams	<i>Epioblasma torulosa torulosa</i>	Tubercled (Pearlymussel) Blossom	91	0
Clams	<i>Epioblasma triquetra</i>	Snuffbox Mussel	620	0
Clams	<i>Epioblasma turgidula</i>	Turgid (Pearlymussel) Blossom	68	0
Clams	<i>Fusconaia burkei</i>	Tapered Pigtoe	6	0
Clams	<i>Fusconaia cor</i>	Shiny Pigtoe	71	0
Clams	<i>Fusconaia cuneolus</i>	Finerayed Pigtoe	72	0
Clams	<i>Fusconaia escambia</i>	Narrow Pigtoe	11	0
Clams	<i>Fusconaia rotulata</i>	Round Ebonyshell	7	0
Clams	<i>Hemistena lata</i>	Cracking Pearlymussel	172	0
Clams	<i>Lampsilis abrupta</i>	Pink (Pearlymussel) Mucket	459	0
Clams	<i>Lampsilis altilis</i>	Finelined Pocketbook	45	0
Clams	<i>Lampsilis higginsii</i>	Higgins Eye (Pearlymussel)	123	0
Clams	<i>Lampsilis perovalis</i>	Orangenacre Mucket	40	2
Clams	<i>Lampsilis powellii</i>	Arkansas Fatmucket	29	0
Clams	<i>Lampsilis subangulata</i>	Shinyray ed Pocketbook	18	5
Clams	<i>Lampsilis virescens</i>	Alabama Lampmussel	46	0
Clams	<i>Lasmigona decorata</i>	Carolina Heelsplitter	97	0
Clams	<i>Lemiox rimosus</i>	Birdwing Pearlymussel	161	0
Clams	<i>Leptodea leptodon</i>	Scaleshell Mussel	303	0
Clams	<i>Margaritifera hembeli</i>	Louisiana Pearlshell	23	0
Clams	<i>Margaritifera marrianae</i>	Alabama Pearlshell	7	0
Clams	<i>Medionidus acutissimus</i>	Alabama Moccasinshell	91	0
Clams	<i>Medionidus parvulus</i>	Coosa Moccasinshell	43	0
Clams	<i>Medionidus penicillatus</i>	Gulf Moccasinshell	32	5
Clams	<i>Medionidus simpsonianus</i>	Ochlockonee Moccasinshell	4	5
Clams	<i>Obovaria retusa</i>	Ring Pink (Mussel)	324	0
Clams	<i>Pegias fabula</i>	Littlewing Pearlymussel	33	0
Clams	<i>Plethobasus cicatricosus</i>	White (Pearlymussel) Wartyback	180	0
Clams	<i>Plethobasus cooperianus</i>	Orangefoot (Pearlymussel)	263	0

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Major Taxonomic Groupings	Latin Name	Common Name	Facility Overlaps	Critical Habitat Overlaps
		Pimpleback		
Clams	<i>Plethobasus cyphus</i>	Sheepnose Mussel	683	0
Clams	<i>Pleurobema clava</i>	Clubshell	395	0
Clams	<i>Pleurobema collina</i>	James Spiny mussel	28	0
Clams	<i>Pleurobema curtum</i>	Black Clubshell	10	0
Clams	<i>Pleurobema decisum</i>	Southern Clubshell	82	2
Clams	<i>Pleurobema furvum</i>	Dark Pigtoe	37	0
Clams	<i>Pleurobema georgianum</i>	Southern Pigtoe	32	0
Clams	<i>Pleurobema gibberum</i>	Cumberland Pigtoe	3	0
Clams	<i>Pleurobema hanleyianum</i>	Georgia Pigtoe	31	0
Clams	<i>Pleurobema marshalli</i>	Flat Pigtoe	29	0
Clams	<i>Pleurobema perovatum</i>	Ovate Clubshell	94	0
Clams	<i>Pleurobema plenum</i>	Rough Pigtoe	307	0
Clams	<i>Pleurobema pyriforme</i>	Oval Pigtoe	33	5
Clams	<i>Pleurobema strodeanum</i>	Fuzzy Pigtoe	21	0
Clams	<i>Pleurobema taitianum</i>	Heavy Pigtoe	48	0
Clams	<i>Potamilus capax</i>	Fat Pocketbook	269	0
Clams	<i>Potamilus inflatus</i>	Alabama (=Inflated) Heelsplitter	84	0
Clams	<i>Ptychobranchus greenii</i>	Triangular Kidneyshell	40	0
Clams	<i>Ptychobranchus jonesi</i>	Southern Kidneyshell	17	0
Clams	<i>Quadrula cylindrica strigillata</i>	Rough Rabbitsfoot	8	1
Clams	<i>Quadrula fragosa</i>	Winged Mapleleaf	297	0
Clams	<i>Quadrula intermedia</i>	Cumberland (Pearlymussel) Monkeyface	81	0
Clams	<i>Quadrula sparsa</i>	Appalachian (Pearlymussel) Monkeyface	54	0
Clams	<i>Quadrula stapes</i>	Stirrupshell	41	0
Clams	<i>Toxolasma cylindrellus</i>	Pale (Pearlymussel) Lilliput	46	0
Clams	<i>Villosa choctawensis</i>	Choctaw Bean	18	0
Clams	<i>Villosa fabalis</i>	Rayed Bean	323	0
Clams	<i>Villosa perpurpurea</i>	Purple Bean	5	1
Clams	<i>Villosa trabalis</i>	Cumberland (Pearlymussel) Bean	90	0
Coral	<i>Acropora cervicornis</i>	Staghorn Coral	16	16
Coral	<i>Acropora palmata</i>	Elkhorn Coral	16	16
Fish	<i>Acipenser brevirostrum</i>	Shortnose Sturgeon	515	0
Fish	<i>Acipenser medirostris</i>	North American Green Sturgeon	94	0
Fish	<i>Acipenser oxyrinchus desotoi</i>	Gulf Sturgeon	105	12
Fish	<i>Acipenser oxyrinchus oxyrinchus</i>	Atlantic Sturgeon	29	0
Fish	<i>Acipenser transmontanus</i>	White Sturgeon	118	0

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Major Taxonomic Groupings	Latin Name	Common Name	Facility Overlaps	Critical Habitat Overlaps
Fish	<i>Catostomus santaanae</i>	Santa Ana Sucker	10	0
Fish	<i>Chasmistes liorus</i>	June Sucker	19	0
Fish	<i>Chrosomus saylori</i>	Laurel Dace	18	0
Fish	<i>Cyprinella caerulea</i>	Blue Shiner	28	0
Fish	<i>Cyprinodon macularius</i>	Desert Pupfish	3	0
Fish	<i>Erimonax monachus</i>	Spotfin Chub	48	0
Fish	<i>Erimystax cahni</i>	Slender Chub	6	0
Fish	<i>Etheostoma boschungii</i>	Slackwater Darter	30	0
Fish	<i>Etheostoma chermocki</i>	Vermilion Darter	6	0
Fish	<i>Etheostoma chienense</i>	Relict Darter	3	0
Fish	<i>Etheostoma etowahae</i>	Etowah Darter	5	0
Fish	<i>Etheostoma fonticola</i>	Fountain Darter	1	0
Fish	<i>Etheostoma nianguae</i>	Niangua Darter	2	0
Fish	<i>Etheostoma percnurum</i>	Duskytail Darter	1	0
Fish	<i>Etheostoma phytophilum</i>	Rush Darter	8	0
Fish	<i>Etheostoma rubrum</i>	Bayou Darter	2	0
Fish	<i>Etheostoma scotti</i>	Cherokee Darter	3	0
Fish	<i>Etheostoma sellare</i>	Maryland Darter	48	0
Fish	<i>Etheostoma susanae</i>	Cumberland Darter	1	0
Fish	<i>Etheostoma wapiti</i>	Boulder Darter	12	0
Fish	<i>Eucyclogobius newberryi</i>	Tidewater Goby	42	0
Fish	<i>Gambusia nobilis</i>	Pecos Gambusia	1	0
Fish	<i>Gasterosteus aculeatus williamsoni</i>	Unarmored Threespine Stickleback	3	0
Fish	<i>Gila bicolor ssp.</i>	Hutton Tui Chub	25	0
Fish	<i>Gila bicolor ssp. mohavensis</i>	Mohave Tui Chub	19	0
Fish	<i>Gila cypha</i>	Humpback Chub	5	0
Fish	<i>Gila elegans</i>	Bonytail Chub	12	0
Fish	<i>Gila intermedia</i>	Gila Chub	2	0
Fish	<i>Gila seminuda (=robusta)</i>	Virgin River Chub	1	0
Fish	<i>Hybognathus amarus</i>	Rio Grande Silvery Minnow	1	0
Fish	<i>Hypomesus transpacificus</i>	Delta Smelt	18	7
Fish	<i>Lepidomeda vittata</i>	Little Colorado Spinedace	1	0
Fish	<i>Meda fulgida</i>	Spikedace	2	0
Fish	<i>Menidia extensa</i>	Waccamaw Silverside	1	0
Fish	<i>Notropis albizonatus</i>	Palezone Shiner	48	0
Fish	<i>Notropis cahabae</i>	Cahaba Shiner	9	0
Fish	<i>Notropis girardi</i>	Arkansas River Shiner	51	0
Fish	<i>Notropis mekistocholas</i>	Cape Fear Shiner	26	0

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Major Taxonomic Groupings	Latin Name	Common Name	Facility Overlaps	Critical Habitat Overlaps
Fish	<i>Notropis simus pecosensis</i>	Pecos Bluntnose Shiner	1	0
Fish	<i>Notropis topeka (=tristis)</i>	Topeka Shiner	104	0
Fish	<i>Noturus crypticus</i>	Chucky Madtom	8	0
Fish	<i>Noturus flavipinnis</i>	Yellowfin Madtom	21	0
Fish	<i>Noturus placidus</i>	Neosho Madtom	26	0
Fish	<i>Noturus stanauli</i>	Pygmy Madtom	3	0
Fish	<i>Noturus trautmani</i>	Scioto Madtom	7	0
Fish	<i>Oncorhynchus (=Salmo) keta</i>	Chum Salmon	81	13
Fish	<i>Oncorhynchus (=Salmo) kisutch</i>	Coho Salmon	109	3
Fish	<i>Oncorhynchus (=Salmo) mykiss</i>	Steelhead	190	44
Fish	<i>Oncorhynchus (=Salmo) nerka</i>	Sockeye Salmon	77	0
Fish	<i>Oncorhynchus (=Salmo) tshawytscha</i>	Chinook Salmon	126	55
Fish	<i>Oncorhynchus clarki stomias</i>	Greenback Cutthroat Trout	26	0
Fish	<i>Oncorhynchus clarkii henshawi</i>	Lahontan Cutthroat Trout	2	0
Fish	<i>Oregonichthys crameri</i>	Oregon Chub	18	0
Fish	<i>Percina antesella</i>	Amber Darter	4	0
Fish	<i>Percina aurolineata</i>	Goldline Darter	10	0
Fish	<i>Percina jenkinsi</i>	Conasauga Logperch	1	0
Fish	<i>Percina pantherina</i>	Leopard Darter	3	0
Fish	<i>Percina rex</i>	Roanoke Logperch	9	0
Fish	<i>Percina tanasi</i>	Snail Darter	60	0
Fish	<i>Phoxinus cumberlandensis</i>	Blackside Dace	19	0
Fish	<i>Plagopterus argentissimus</i>	Woundfin	1	0
Fish	<i>Poeciliopsis occidentalis</i>	Gila (Incl. Yaqui) Topminnow	2	0
Fish	<i>Ptychocheilus lucius</i>	Colorado Pikeminnow (=Squawfish)	18	4
Fish	<i>Rhinichthys osculus ssp.</i>	Foskett Speckled Dace	167	0
Fish	<i>Salmo salar</i>	Atlantic Salmon	147	0
Fish	<i>Salvelinus confluentus</i>	Bull Trout	77	52
Fish	<i>Scaphirhynchus albus</i>	Pallid Sturgeon	268	0
Fish	<i>Scaphirhynchus platyrhynchus</i>	Shovelnose Sturgeon	461	0
Fish	<i>Scaphirhynchus suttkusi</i>	Alabama Sturgeon	52	3
Fish	<i>Thaleichthys pacificus</i>	Pacific Eulachon	46	0
Fish	<i>Tiaroga cobitis</i>	Loach Minnow	1	0
Fish	<i>Xyrauchen texanus</i>	Razorback Sucker	17	1
Insect	<i>Brychius hungerfordi</i>	Hungerford's Crawling Water Beetle	84	0
Mammal	<i>Enhydra lutris nereis</i>	Southern Sea Otter	169	0

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Major Taxonomic Groupings	Latin Name	Common Name	Facility Overlaps	Critical Habitat Overlaps
Mammal	<i>Eubalaena glacialis</i>	North Atlantic Right Whale	77	0
Mammal	<i>Eumetopias jubatus</i>	Steller Sea-Lion	16	0
Mammal	<i>Leopardus (=Felis) pardalis</i>	Ocelot	226	0
Mammal	<i>Megaptera novaeangliae</i>	Humpback Whale	14	0
Mammal	<i>Orcinus orca</i>	Killer Whale	6	0
Mammal	<i>Sylvilagus palustris hefneri</i>	Lower Keys Marsh Rabbit	118	0
Mammal	<i>Trichechus manatus</i>	West Indian Manatee	192	15
Reptile	<i>Caretta caretta</i>	Loggerhead Sea Turtle	260	0
Reptile	<i>Chelonia mydas</i>	Green Sea Turtle	192	0
Reptile	<i>Crocodylus acutus</i>	American Crocodile	15	0
Reptile	<i>Dermochelys coriacea</i>	Leatherback Sea Turtle	164	0
Reptile	<i>Eretmochelys imbricata</i>	Hawksbill Turtle	107	0
Reptile	<i>Eretmochelys imbricata</i>	Hawksbill Sea Turtle	17	0
Reptile	<i>Graptemys flavimaculata</i>	Yellow-Blotched Map Turtle	72	0
Reptile	<i>Lepidochelys kempii</i>	Kemp's Ridley Sea Turtle	164	0
Reptile	<i>Lepidochelys olivacea</i>	Olive Ridley Sea Turtle	23	0
Reptile	<i>Pseudemys alabamensis</i>	Alabama Red-Belly Turtle	195	0
Snail	<i>Assiminea pecos</i>	Pecos Assiminea Snail	1	0
Snail	<i>Atheurnia anthonyi</i>	Anthony's Riversnail	329	0
Snail	<i>Cameloma decampi</i>	Slender Cameloma	186	0
Snail	<i>Elimia crenatella</i>	Lacy (Snail) Elimia	186	0
Snail	<i>Juturnia kosteri</i>	Koster's Springsnail	5	0
Snail	<i>Leptoxis ampla</i>	Round Rocksnail	186	0
Snail	<i>Leptoxis foremani</i>	Interrupted (=Georgia) Rocksnail	254	0
Snail	<i>Leptoxis plicata</i>	Plicate Rocksnail	186	0
Snail	<i>Leptoxis taeniata</i>	Painted Rocksnail	186	0
Snail	<i>Lepyrium showalteri</i>	Flat Pebblesnail	186	0
Snail	<i>Lioplax cyclostomaformis</i>	Cylindrical (Snail) Lioplax	254	0
Snail	<i>Physa natricina</i>	Snake River Physa Snail	2	0
Snail	<i>Pleurocera foremani</i>	Rough Hornsnail	254	1
Snail	<i>Pyrgulopsis neomexicana</i>	Socorro Springsnail	5	0
Snail	<i>Taylorconcha serpenticola</i>	Bliss Rapids Snail	1	0
Snail	<i>Tryonia alamosae</i>	Alamosa Springsnail	5	0
Snail	<i>Tulotoma magnifica</i>	Tulotoma Snail	186	0

7.2 Uncertainty associated with the NLAA Effects Determination

Implementation of the proposed rule is considered broadly beneficial in nature (even though it does not immediately eliminate take of T&E species), but there is considerable uncertainty regarding the

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effects of the rule for individual species, thus complicating efforts to project population responses to the proposed action other than that those based on documented take (Section 5.3). Some sources of this uncertainty include:

- Lack of data. EPA is at present unable to identify the complete universe of facilities regulated by the 316(b) final rule. Moreover, few data exist from which EPA and the Services are able to estimate the effects of the rule on T&E species.
- Location of the facility – the location of the facility CWIS relative to associated T&E habitat was determined by geographic proximity relative to the designated or identified habitat, but did not consider the relative location (i.e., upstream or downstream, nearbank vs. farbank) that may affect species-facility interactions.
- CWIS water withdrawal volume of facility – the CWIS water withdrawal varies widely due to the size or generating capacity of the facility. Difference in withdrawal flow volume for facilities was not considered and a single very large facility could have a disproportionate effect on a T&E species if located nearby.
- Location of the CWIS within the receiving water – location and depth of the CWIS within the cooling water source can affect impact relative to T&E species and their vulnerable life stages.
- Scope of CWIS modifications - the nature and degree of required CWIS modifications will vary among the non-compliant facilities.
- Accuracy of habitat delineations - habitat locations for non-federal identified habitats included well-defined (GIS-delineated), approximate (HUC-codes), and descriptive. The variation in the accuracy of the habitat location will vary widely.
- Impacts on functional groups – implementation of the final rule will result in CWIS modifications that will reduce IM and set facility-specific requirements for entrainment. This suggests that the final rule may have differential beneficial effects among functional groups. It might be expected that fish or pelagic species vulnerable to impingement would benefit to a greater degree than freshwater mussels where entrainment of eggs and vulnerable life stages constitute the great proportion of species loss.
- Proportion of the T&E species – with the exception of federal designated critical habitats, there is no information to indicate the relative size or importance of the affected T&E habitat or sub-population relative to the total species range or numbers.

7.3 Effects Determination for the Proposed Action and Request for Further Consultation with the Services

[REDACTED]

[REDACTED]

[REDACTED]

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Under the final rule, regulated improvements in CWIS characteristics and operations will have the designed effect of reducing I&E mortality, which in turn is expected to have beneficial effects for some T&E species (see Section 5.1). The nature and magnitude of beneficial effects will be dependent on the type, size and location of the facility, the degree of improvement in CWIS performance required by the rule, the nature and number of T&E species associated with the facility, and many other site specific factors. For some species, the beneficial effects could, under closer examination, be deemed to be insignificant or discountable.

Based on the findings of the BE for the proposed action of implementing the final rule, EPA requests formal consultation with the Services.

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9. Appendix

Table 9-1: Threatened and Endangered Species Excluded from the Analysis of the Proposed Action

Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
Amphibian	Reticulated Flatwoods Salamander	<i>Ambystoma bishopi</i>	Inhabits pine flatwood-wiregrass savannah; breeds in ephemeral wetland depression < 0.5 m deep, invertivore in all life stages	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D042
Amphibian	California Tiger Salamander	<i>Ambystoma californiense</i> : Santa Barbara County California	Inhabits only low-elevation (below 60 m or 200 ft) vernal pools and other seasonal ponds associated with grassland and oak savannah plant communities.	http://ecos.fws.gov/docs/life_histories/D01T.html
Amphibian	California Tiger Salamander	<i>Ambystoma californiense</i> : Sonoma County California	Inhabits only low-elevation (below 60 m or 200 ft) vernal pools and other seasonal ponds associated with grassland and oak savannah plant communities.	http://ecos.fws.gov/docs/life_histories/D01T.html
Amphibian	California Tiger Salamander	<i>Ambystoma californiense</i> : Central California	Inhabits only low-elevation (below 60 m or 200 ft) vernal pools and other seasonal ponds associated with grassland and oak savannah plant communities.	http://ecos.fws.gov/docs/life_histories/D01T.html
Amphibian	Frosted Flatwoods Salamander	<i>Ambystoma cingulatum</i>	Inhabits pine flatwood-wiregrass savannah; breeds in ephemeral wetland depression < 0.5 m deep, invertivore in all life stages	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D013
Amphibian	Santa Cruz Long-Toed Salamander	<i>Ambystoma macrodactylum croceum</i>	Inhabits Shrubland/chaparral/Hardwoods; breeds in shallow ponds with abundant submerged vegetation; ponds fill in winter and spring, dry by late summer, must hold water for at least 90 days; insectivore all life stages	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ambystoma+macrodactylum+croceum
Amphibian	Sonora Tiger Salamander	<i>Ambystoma tigrinum stebbinsi</i>	Breeds in Cienegas, impounded cienegas, springs, livestock tanks; inhabits adjacent terrestrial habitat (oak woodlands and grassland) when not in pond.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ambystoma+tigrinum+stebbinsi
Amphibian	Arroyo (=Arroyo Southwestern) Toad	<i>Anaxyrus californicus</i>	Inhabits washes, streams, and arroyos, and adjacent uplands (desert, shrubland) sandy banks in riparian woodlands (willow, cottonwood, sycamore, and/or coast live oak) in California; Lays eggs among gravel, leaves, or sticks, or on mud or clean sand, at bottom of shallow quiet waters of streams or shallow ponds, in areas with little or no emergent	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Anaxyrus+californicus

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			vegetation; Immature - herbivore; adult - invertivore.	
Amphibian	Houston Toad	Bufo houstonensis	Restricted to areas with soft sandy soils; pine forest, mixed deciduous forest, coastal prairie in Texas; Eggs and larvae develop in shallow water of roadside ditches, temporary ponds in residential areas and pastures, and other seasonally flooded low spots; for successful breeding, water must persist for at least 60 days; Immature - herbivore; adult - invertivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Bufo+houstonensis
Amphibian	Guajon	Eleutherodactylus cooki	The guajón occurs at low and intermediate elevations from 18 to 1,183 feet above sea level (36-360.7 meters above sea level) in southeastern Puerto Rico where they inhabit caves formed by large boulders of granite rock known as "guajonales" or streams with patches of rocks without cave systems.	http://ecos.fws.gov/docs/recovery_plan/040924b.pdf
Amphibian	Golden Coqui	Eleutherodactylus jasperi	Endemic to small mountainous area in Puerto Rico, inhabits the water-filled leaf axils of a few species of bromeliads.	http://ecos.fws.gov/docs/recovery_plan/840419c.pdf
Amphibian	Llanero Coqui	Eleutherodactylus juanariveroi	Found only on a palustrine herbaceous wetland at Sabana Seca Ward, PR. Species was first discovered and described in 2005, the author estimated that the coqui' llanero occurs on approximately 445 acres (ac) (180 hectares (ha)).	http://www.gpo.gov/fdsys/pkg/FR-2012-10-04/pdf/2012-23999.pdf
Amphibian	Puerto Rican Crested Toad	Peltophryne lemur	The Puerto Rican crested toad inhabits low—elevation arid or semi—arid, rocky areas with an abundance of limestone fissures and cavities in well drained soil in 9 localities in PR; has a semifossorial existence.	http://ecos.fws.gov/docs/recovery_plan/920807a.pdf
Amphibian	Red Hills Salamander	Phaeognathus hubrichti	Inhabits slopes of mesic, shaded ravines dominated by hardwood trees in southern Alabama; terrestrial breeder; invertivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Phaeognathus+hubrichti
Amphibian	Cheat Mountain Salamander	Plethodon nettingi	Inhabits primarily red spruce-yellow birch or spruce-dominated forests; eggs have been found in and under rotting logs, and under rocks; invertivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Plethodon+nettingi
Amphibian	Shenandoah Salamander	Plethodon shenandoah	Woodland salamander with no aquatic stage; generally found in forested conditions, where	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=D01G

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			the presence of an overstory promotes surface moisture; invertivore.	
Amphibian	Chiricahua Leopard Frog	Rana chiricahuensis	This species occurs at a wide range of altitudes in pine and pine-oak forests with permanent water ponds of moderate depth as well as montane streams; eggs laid in shallow pools; immature - herbivore, adult invertivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rana+chiricahuensis
Amphibian	Mountain Yellow-Legged Frog	Rana muscosa	Habitat is found between 1,214 to 7,546 feet (370 to 2,300 meter) in elevation includes sunny riverbanks, meadow streams, isolated pools, and lake borders in the Sierra Nevada, rocky stream courses in southern California; ; immature - herbivore, adult invertivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rana+muscosa
Amphibian	Dusky Gopher Frog	Rana sevosia	Habitat includes both upland sandy habitats historically forested with longleaf pine and isolated temporary wetland breeding sites imbedded within this forested landscape; restricted to MS. This frog spends the majority of its life in or near underground refugia; immature - herbivore, adult invertivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rana+sevosia
Arachnid	Kauai Cave Wolf Or Pe'e Pe'e Maka 'Ole Spider	Adelocosa anops	Inhabits the deep and stagnant air zones of pahoehoe lava	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Adelocosa+anops
Arachnid	Robber Baron Cave Meshweaver	Cicurina baronia	Subterranean obligate, cave-dwelling spider; known only from Robber Baron Cave, TX	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cicurina+baronia
Arachnid	Madla's Cave Meshweaver	Cicurina madla	Subterranean obligate, cave-dwelling spider; known only from Bexar County, TX	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cicurina+madla
Arachnid	Braken Bat Cave Meshweaver	Cicurina venii	Subterranean obligate, cave-dwelling spider	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cicurina+venii
Arachnid	Government Canyon Bat Cave Meshweaver	Cicurina vespera	Subterranean obligate, cave-dwelling spider; known from only one cave in TX	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cicurina+vespera
Arachnid	Spruce-Fir Moss Spider	Microhexura montivaga	Known only from high elevation spruce-fir forest communities, living on moss mats, growing on rocks.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Microhexura+montivaga
Arachnid	Government Canyon Bat Cave Spider	Neoleptoneta microps	Subterranean obligate, cave-dwelling spider; known from only two caves in Government Canyon State Natural Area, TX	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Neoleptoneta+microps
Arachnid	Cokendolpher Cave Harvestman	Texella cokendolpheri	Subterranean obligate, cave-dwelling spider; known only from Robber Baron Cave, TX	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Texella+cokendolpheri

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
Arachnid	Bone Cave Harvestman	Texella reyesi	Occurs in very small, isolated karst caves in the Edwards Limestone Formation	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Texella+reyesi
Bird	Puerto Rican Sharp-Shinned Hawk	Accipiter striatus venator	Lives primarily in the forested habitats of Puerto Rico. Known to eat almost exclusively small birds. Excluded due to terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/970908.pdf
Bird	Nihoa (Old World Warbler) Millerbird	Acrocephalus familiaris kingi	Millerbirds live on Nihoa Island (Hawaii), which is steep and rocky, with low, scrubby vegetation. Feeds on insects by probing and gleaning leaves and twigs, and by aerial hawking; also obtains prey from leaf litter and soil surface. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Acrocephalus+familiaris+kingi
Bird	Nightingale Reed (Old World Warbler) Warbler	Acrocephalus luscini	Only known to live in Guam and Northern Mariana Islands	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B043
Bird	Mariana Gray Swiftlet	Aerodramus vanikorensis bartschi	Not found in coterminous 48 states, AK, or HI	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Aerodramus+vanikorensis+bartschi
Bird	Yellow-Shouldered Blackbird	Agelaius xanthomus	Although this species is omnivorous, it can be basically characterized as an arboreal insectivore. During the nesting season the young's diet is about 90 percent arthropod material. At bird feeders and around domestic animals, this blackbird has been observed to take cattle ration, dog food, monkey chow, nectar, fruit, cooked rice, and granulated sugar. Excluded due to terrestrial habitat and varied diet.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B05T
Bird	Puerto Rican Parrot	Amazona vittata	Puerto Rican Parrots currently concentrate their activities within the palo colorado (Cyrilla racemiflora) forest zone at its interface with the tabonuco (Dacryodes excelsa) forest zone. Parrots can consume a wide variety of fruits, seeds, and leaves. A forest-wide assessment of food availability for parrots suggests that food is not a limiting factor. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/090617.pdf
Bird	Cape Sable Seaside Sparrow	Ammodramus maritimus mirabilis	Lives in seasonally flooded, brushless, subtropical interior marshes, fresh to slightly brackish; cordgrass, rushes, sawgrass, etc. Eats	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ammodramus+maritimus+mirabilis

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			mainly insects and other small invertebrates, also some seeds. Excluded due to terrestrial habitat and diet of non-aquatic insects.	
Bird	Florida Grasshopper Sparrow	<i>Ammodramus</i> <i>savannarum floridanus</i>	Lives in dry prairie with stunted saw palmetto and dwarf oaks, bluestems and wiregrass. Eats insects, other small invertebrates, grain, seeds of herbaceous plants. Most food items are picked off the surface of the ground. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ammodramus+savannarum+floridanus
Bird	San Clemente Sage Sparrow	<i>Amphispiza belli</i> <i>clementeae</i>	Lives in moderately dense, dry scrub areas along west coast of island; vegetation includes mixture of low-growing, dry-season deciduous shrubs, mainly box thorn, ragwort, and cactus. Feeds on insects, spiders and seeds. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Amphispiza+belli+clementeae
Bird	Ash-Breasted Tit-Tyrant	<i>Anairetes alpinus</i>	Only known to live in South America (Bolivia, Peru)	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B0BF
Bird	Laysan Duck	<i>Anas laysanensis</i>	Found only on Laysan Island, in the Northwest Hawaiian Islands	http://ecos.fws.gov/docs/life_histories/B006.html
Bird	Florida Scrub-Jay	<i>Aphelocoma</i> <i>coerulescens</i>	The Florida scrub-jay lives only in the scrub and scrubby flatwoods habitats of Florida. Insects comprise the majority of the animal's diet throughout most of the year; acorns are by far the most important plant food	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B082
Bird	Puerto Rican Broad-Winged Hawk	<i>Buteo platypterus</i> <i>brunnescens</i>	Known to prey on centipedes, frogs, lizards, mice, rats and birds. Excluded due to habitat (forests of Puerto Rico) and varied diet of non-aquatic species.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B06Y
Bird	Ivory-Billed Woodpecker	<i>Campephilus principalis</i>	The Ivory-billed Woodpecker was historically described as a resident of large, contiguous forests with numerous large trees. Preys on insects from recently dead or dying tree trunks like large beetle larvae or fruits and nuts. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B03Q
Bird	Puerto Rican Nightjar	<i>Caprimulgus noctitherus</i>	Lives in dry semideciduous forests or woodlands in Puerto Rico. Captures insects in flight for food. Excluded based on terrestrial	http://ecos.fws.gov/docs/recovery_plan/840419d.pdf

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			habitat and diet.	
Bird	Oahu Elepaio	<i>Chasiempis sandwichensis ibidis</i>	Lives in the canopy of exotic forests in Hawaii. Eats insects obtained by foliage-gleaning, bark-picking, and aerial sallies below forest canopy. Forages in areas with high foliage density, large bark surface area, and many twigs and branches. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Chasiempis+sandwichensis+ibidis
Bird	Masked (Quail) Bobwhite	<i>Colinus virginianus ridgwayi</i>	Lives in open grasslands, semi-arid desert scrub, or desert grasslands. Eats various legume and weed seeds in fall, winter, and early spring; plant material and insects in summer and early fall. Picks food items from substrate. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Colinus+virginianus+ridgwayi
Bird	Puerto Rican Plain Pigeon	<i>Columba inornata wetmorei</i>	Feeds on fruits and seeds, and livestock feed. Usually receives water from the axils of bromeliads or from water-retaining blossoms of the African tulip-tree. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B049
Bird	Mariana (=Aga) Crow	<i>Corvus kubaryi</i>	Only known to live in Guam and Northern Mariana Islands	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B05X
Bird	White-Necked Crow	<i>Corvus leucognaphalus</i>	Only known to live in the Caribbean (Dominican Republic, Haiti, Jamaica)	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B08A
Bird	Golden-Cheeked Warbler (=Wood)	<i>Dendroica chrysoparia</i>	Lives in woodland areas and eats insects (especially soft-bodied caterpillars), and other arthropods in breeding season. Forages mostly in hardwoods (oaks) on breeding range, in shrubby understory of winter habitat. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dendroica+chrysoparia+
Bird	Kirtland's Warbler	<i>Dendroica kirtlandii</i>	The Kirtland's warbler nests only in young jack pine forests growing on a special type of sandy soil. Primarily insect eaters, Kirtland's warblers forage for insects and larvae near the ground and in lower parts of pines and oaks. They also eat blueberries. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B031
Bird	Southwestern Willow Flycatcher	<i>Empidonax traillii extimus</i>	Found in thickets, scrubby and brushy areas, open second growth, swamps, and open	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Empidonax+traillii+extimus

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			woodland. Eats mainly insects caught in flight, sometimes gleans insects from foliage; occasionally eats berries. Lives by riparian zone.	
Bird	Northern Aplomado Falcon	Falco femoralis septentrionalis	Habitat ranges from palm and oak savannahs to various desert grassland associations to open pine woodlands. Northern aplomado falcons feed on a variety of prey, including birds, insects, rodents, small snakes, and lizard. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B06V
Bird	Mariana Common Moorhen	Gallinula chloropus guami	Found only in the Marinas archipelago	http://ecos.fws.gov/docs/life_histories/B062.html
Bird	California Condor	Gymnogyps californianus	Resides in mountainous country at low and moderate elevations, especially rocky and brushy areas with cliffs available for nest sites, with foraging habitat encompassing grasslands, oak savannas, mountain plateaus, ridges, and canyons. Carrion; feeds primarily on a variety of small, medium and large mammal carcasses, including those of weasels, kangaroo rats, sheep, cattle, deer, ground squirrels, horses, coyotes, rabbits, etc. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Grus+canadensis+pulla
Bird	Guam Micronesian Kingfisher	Halcyon cinnamomina cinnamomina	Endemic to Guam	http://ecos.fws.gov/docs/life_histories/B061.html
Bird	San Clemente Loggerhead Shrike	Lanius ludovicianus mearnsi	Endemic to uninhabited San Clemente Island	http://ecos.fws.gov/docs/life_histories/B05R.html
Bird	Akekee	Loxops caeruleirostris	The Kauai akepa, or akekee, is a small forest bird found only on the island of Kauai. The akekee uses its bill to open flower and leaf buds while foraging for arthropod prey (insects, insect larvae, spiders). Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=B0AF
Bird	Hawaii (Honeycreeper) Akepa	Loxops coccineus coccineus	Tends to live in wet and mesic forest (mainly ohia or koa), especially in mountains on windward slopes. Diet includes caterpillars, spiders, occasionally nectar. Feeds among leaves, buds, and flowers of forest canopy. Excluded due to terrestrial habitat and diet of	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Loxops+coccineus+coccineus

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			non-aquatic species.	
Bird	Maui (Honeycreeper) Akepa	<i>Loxops coccineus ochraceus</i>	Appears in the canopy of montane wet and mesic forests. Probably similar to other subspecies, which eat caterpillars, spiders, and occasionally nectar, and feed among leaves, buds, and flowers of forest canopy. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Loxops+coccineus+ochraceus
Bird	Micronesian Megapode	<i>Megapodius laperouse</i>	Only known to live in Guam and Northern Mariana Islands	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B00T
Bird	Molokai Thrush	<i>Myadestes lanaiensis rutha</i>	Lives in wet montane ohia forest with olapa and dense understory of mosses, vines, and tree ferns (Hawaii). Eats fruits, insects, and snails taken under the forest canopy. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Myadestes+lanaiensis+rutha
Bird	Akikiki	<i>Oreomystis bairdi</i>	Habitat consists of humid mountain forest. Prefers nesting in the crown of nonblooming ohia trees. Eats mainly insects and other invertebrates obtained while creeping over trunks and larger branches of trees, especially koa; rarely feeds among flowers. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Oreomystis+bairdi
Bird	Red-Cockaded Woodpecker	<i>Picoides borealis</i>	Habitat consists of open, mature pine woodlands. Insects eaten are primarily ants, spiders, cockroaches, centipedes, termites, and the larvae and eggs of various other insects. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Picoides+borealis
Bird	Inyo California Towhee	<i>Pipilo crissalis eremophilus</i>	The Inyo California towhee is a desert inhabitant. This subspecies requires areas of dense riparian habitat to provide nesting substrate, protection from predators, and shade from the desert sun. Beal (1910) quantified the diet of brown towhees as consisting of 51 percent weed seeds, 28 percent grain, 14 percent invertebrates, and 4.4 percent fruit. Insects consumed include unidentified insect larvae and winged and crawling insects such as moths, flies, grasshoppers, and beetles.	http://ecos.fws.gov/docs/recovery_plan/980410c.pdf

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			Excluded based on terrestrial habitat and diet.	
Bird	Coastal California Gnatcatcher	<i>Poliophtila californica californica</i>	The coastal California gnatcatcher typically occurs in or near sage scrub habitat. Feeds on insects. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/federal_register/fr3532.pdf
Bird	Audubon's Crested Caracara	<i>Polyborus plancus audubonii</i>	Caracaras' habitat include open country, including pastureland, cultivated areas, and semidesert, in both arid and moist habitats but more commonly in the former. Feeds opportunistically on carrion (and associated insect larvae), various live vertebrates, insects, and worms. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Polyborus+plancus+audubonii
Bird	Guam Rail	<i>Rallus owstoni</i>	Only known to live in Guam	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B063
Bird	Northern Spotted Owl	<i>Strix occidentalis caurina</i>	Lives principally in conifer forests eating small mammals. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Strix+occidentalis+caurina
Bird	Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Lives principally in conifer forests. Owls feed on small mammals, particularly mice, voles, and woodrats. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B074
Bird	Laysan (Honeycreeper) Finch	<i>Telespyza cantans</i>	Lives in grasslands/shrublands. Eats seabird eggs, insects, seeds, flower buds, soft parts of grass stems, tender shoots of shrubs, carrion; also fly larvae obtained from dead seabirds. Excluded because the Laysan finch lives in a terrestrial habitat and eats a varied diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Telespyza+cantans
Bird	Nihoa (Honeycreeper) Finch	<i>Telespyza ultima</i>	Rock outcroppings and shrub-covered slopes. Eats insects, seeds, flower buds, seabird eggs. Excluded because it lives in a terrestrial habitat and eats a varied diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Telespyza+ultima
Bird	Attwater's Greater Prairie-Chicken	<i>Tympanuchus cupido attwateri</i>	Lives on the coastal prairie. Summer diet primarily insects, especially grasshoppers. At other times of year eats plant food: fruit, leaves, flowers, shoots, seeds, grain. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Tympanuchus+cupido+attwateri
Bird	Bachman's Warbler (=Wood)	<i>Vermivora bachmanii</i>	Appears in moist deciduous woodland and swamp. Eats insects; frequents flowers in winter and may seek nectar as well. Excluded	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Vermivora+bachmanii

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			due to terrestrial habitat and diet of non-aquatic species.	
Bird	Black-Capped Vireo	Vireo atricapilla	Habitat consists of dense low thickets and oak scrub, mostly on rocky hillsides or steep ravine slopes in rugged terrain. Eats insects (especially caterpillars when available) and spiders, some fruits; forages low in scrubby vegetation. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Vireo+atricapilla
Bird	Least Bell's Vireo	Vireo bellii pusillus	Lives in dense brush, mesquite, willow-cottonwood forest, streamside thickets, and scrub oak. Eats almost exclusively insects, also spiders, snails, fruits; forages in dense brush, occasionally in tree tops. Excluded due to terrestrial habitat and diet of non-aquatic species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Vireo+bellii+pusillus
Bird	Bridled White-Eye	Zosterops conspicillatus	Only known to live in Guam	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B064
Bird	Rota Bridled White-Eye	Zosterops rotensis	Only known to live in Northern Mariana Islands	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=B065
Crustacean	Madison Cave Isopod	Antrolana lira	Habitat includes only subterranean lakes	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Antrolana+lira
Crustacean	Conservancy Fairy Shrimp	Branchinecta conservatio	Found only in vernal pools and other ephemeral water sources; none known from permanent bodies of water	http://ecos.fws.gov/docs/life_histories/K03D.html
Crustacean	Longhorn Fairy Shrimp	Branchinecta longiantenna	Habitat includes only vernal pools and other ephemeral wetlands.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Branchinecta+longiantenna
Crustacean	Vernal Pool Fairy Shrimp	Branchinecta lynchi	Habitat includes only vernal pools and other ephemeral wetlands.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Branchinecta+lynchi
Crustacean	San Diego Fairy Shrimp	Branchinecta sandiegonensis	Habitat includes only vernal pools and other ephemeral wetlands.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Branchinecta+sandiegonensis
Crustacean	Cave Crayfish	Cambarus aculabrum	Habitat includes only cave streams and pools	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cambarus+aculabrum
Crustacean	Cave Crayfish	Cambarus zophonastes	Habitat includes only cave pools and subterranean cave streams	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cambarus+zophonastes
Crustacean	Illinois Cave Amphipod	Gammarus acherondytes	Inhabits riffle areas of cave streams that have a gravel substrate	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gammarus+acherondytes
Crustacean	Noel's Amphipod	Gammarus desperatus	Species is found in aquifer-fed, spring systems in desert grasslands of the Pecos River basin with abundant "karst" topography.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gammarus+desperatus
Crustacean	Vernal Pool	Lepidurus packardii	Habitat includes vernal pools and other seasonal	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Lepidurus+packardii

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
	Tadpole Shrimp		pond habitats	hName=Lepidurus+packardii
Crustacean	Nashville Crayfish	Orconectes shoupi	Found in Inhabits moderately flowing streams with slope of 0.95 m/km-2.46 m/km with firm, usually rocky bottom; requires nonturbid, well-oxygenated water and clean substrate.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Orconectes+shoupi
Crustacean	Squirrel Chimney Cave Shrimp	Palaemonetes cummingi	Habitat only includes caves	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Palaemonetes+cummingi
Crustacean	Alabama Cave Shrimp	Palaemonias alabamae	Inhabits only subterranean aquaic pools; known only from 2 cave systems in AL	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Palaemonias+alabamae
Crustacean	Kentucky Cave Shrimp	Palaemonias ganteri	Endemic to Mammoth Cave / Flint Ridge Cave System	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Palaemonias+ganteri
Crustacean	Kauai Cave Amphipod	Spelaeorchestia koloana	Inhabits only lava tubes and limestone caves on top of lava flows	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Spelaeorchestia+koloana
Crustacean	Riverside Fairy Shrimp	Streptocephalus woottoni	Occur only in vernal pools	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Streptocephalus+woottoni
Crustacean	Peck's Cave Amphipod	Stygobromus (=Stygonectes) pecki	Inhabits only subterranean springs	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Stygobromus+pecki
Crustacean	Hay's Spring Amphipod	Stygobromus hayi	Known only from a single underground aquifer in an urban park. Aquifer is inaccessible except from the outlet	http://ecos.fws.gov/docs/life_histories/K004.html
Crustacean	California Freshwater Shrimp	Syncaris pacifica	Species require high water quality, low pollution, good oxygen levels withiin moderate to small creeks; detritivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Syncaris+pacifica
Fish	Ozark Cavefish	Amblyopsis rosae	Habitat includes only cave streams with pool areas, fed by groundwater	http://ecos.fws.gov/docs/life_histories/E02J.html
Fish	Pygmy Sculpin	Cottus paulus (=pygmaeus)	Known only from Coldwater Spring and its spring run.	http://ecos.fws.gov/docs/life_histories/E01L.html
Fish	White River Springfish	Crenichthys baileyi	Known only from Ash Springs	http://ecos.fws.gov/docs/life_histories/E04U.html
Fish	Hiko White River Springfish	Crenichthys baileyi grandis	Endemic to the remnant waters of the White River system in eastern Nevada. Present in Hiko Spring, Crystal Spring and its outflow; introduced to Blue Link Spring.	http://ecos.fws.gov/docs/life_histories/E04Q.html
Fish	Ash Meadows Amargosa Pupfish	Cyprinodon nevadensis mionectes	Thermal springs and their outflows; source pools and headwaters are essential.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cyprinodon+nevadensis+mionectes
Fish	Pahrump Poolfish	Empetrichthys latos	Habitat consists of shallow warm springs, including alkaline mineral springs and outflow streams	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Empetrichthys+lato
Fish	Watercress Darter	Etheostoma nuchale	Found only in 3 headwater spring in Jefferson County, AL	http://ecos.fws.gov/docs/life_histories/E00U.html

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
Fish	Big Spring Spinedace	<i>Lepidomeda mollispinis pratensis</i>	Endemic to an 8 km section of Condor Canyon, in Meadow Valley Wash, a small perennial stream depending upon Springs discharge to maintain volume - Delume Springs provides a base flow of 0.8m ³ /s.	http://ecos.fws.gov/docs/life_histories/E04L.html
Fish	Independence Valley Speckled Dace	<i>Rhinichthys osculus lethoporus</i>	Found only in the marsh of the largest spring system in Independence Valley Warm Springs	http://ecos.fws.gov/docs/life_histories/E03E.html
Fish	Kendall Warm Springs Dace	<i>Rhinichthys osculus thermalis</i>	Total habitat is spring area and short stream (300m) in the Kendall Warm Springs within the Bridger-Teton National Forest.	http://ecos.fws.gov/docs/life_histories/E00S.html
Fish	Alabama Cavefish	<i>Speoplatyrhinus poulsoni</i>	Inhabits only subterranean waters in the Warsaw limestone formation	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Speoplatyrhinus+poulsoni
Insect	Lange's Metalmark Butterfly	<i>Apodemia mormo langei</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Crambidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Helotes Mold Beetle	<i>Batrisodes ventyvi</i>	A small, reddish-brown, eyeless beetle that superficially resembles an ant; a subterranean obligate species found only in central Texas.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Batrisodes+ventyvi
Insect	Uncompahgre Fritillary Butterfly	<i>Boloria acrocnema</i>	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Boloria+acrocnema
Insect	San Bruno Elfin Butterfly	<i>Callophrys mossii bayensis</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Crambidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Northeastern Beach Tiger Beetle	<i>Cicindela dorsalis dorsalis</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Crambidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Salt Creek Tiger	<i>Cicindela nevadica</i>	Inhabits saline wetlands, streams, and	http://ecos.fws.gov/docs/action_plans/doc3027.pdf

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
	Beetle	lincolniana	groundwater seeps of eastern Nebraska. Largest threats are extensive degradation and alteration for commercial, residential, transportation, and agricultural development.	
Insect	Puritan Tiger Beetle	Cicindela puritana	Burrowing habit. Adults and larvae have been found on the upper portions of sandy beaches near either fresh or salt water. Knisley (1987) determined the habitat for the larvae to be cliffs that were relatively extensive with little vegetation. All areas where this beetle has recently been found are characterized by the presence of "narrow sandy beaches with adjacent well-developed cliffs of sand and clay soil" (Knisley, 1987).	http://www.natureserve.org/explorer/servlet/Nature_Serve?searchName=Cicindela+puritana
Insect	Miami Blue Butterfly	Cyclargus (=Hemiargus) thomasi bethunebakeri	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carabidae.	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXlSn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Nickerbean Blue Butterfly	Cyclargus ammon	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carabidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXlSn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Valley Elderberry Longhorn Beetle	Desmocerus californicus dimorphus	Found in wetlands in central CA; threatened by levee (irrigation) and channelization; recently proposed for delisting in Oct. 2012..	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=I01L
Insect	[Unnamed] Pomace Fly	Drosophila differens	Found only on Molokai island; habitat Wet Forest (host plants in genus Clermontia); no FW facilities in HI; predators not aquatic	http://ecos.fws.gov/docs/federal_register/fr5076.pdf
Insect	[Unnamed] Pomace Fly	Drosophila muli	Found only on Hawaii island; habitat wet forest (host plant Pritchardia beccariana); no FW facilities in HI; predators not aquatic	http://ecos.fws.gov/docs/federal_register/fr5076.pdf
Insect	[Unnamed] Pomace Fly	Drosophila ochrobasis	Found only on Hawaii island; habitat Mesic to Wet Forest (host plant Clermontia sp./ Marattia sp., Myrsine sp.); no FW facilities in HI;	http://ecos.fws.gov/docs/federal_register/fr5076.pdf

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			predators not aquatic	
Insect	Delta Green Ground Beetle	<i>Elaphrus viridis</i>	Found along the margins of vernal pools within 1.5 meters of the water. Specifically the microhabitat seems to consist of areas where the sandy mud substrate slopes gently into the water, and where there is very low-growing vegetation providing 25-100% cover. Invertivores.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Elaphrus+viridis
Insect	El Segundo Blue Butterfly	<i>Euphilotes battoides allyni</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Smith's Blue Butterfly	<i>Euphilotes enoptes smithi</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Bay Checkerspot Butterfly	<i>Euphydryas editha bayensis</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Quino Checkerspot Butterfly	<i>Euphydryas editha quino</i> (=E. e. wrighti)	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Palos Verdes Blue Butterfly	<i>Glaucopsyche lygdamus palosverdesensis</i>	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
				0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Ceraunus Blue Butterfly	Hemiargus ceraunus antibustus	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Schaus Swallowtail Butterfly	Heraclides aristodemus ponceanus	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Pawnee Montane Skipper	Hesperia leonardus montana	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Comal Springs Riffle Beetle	Heterelmis comalensis	Known only from Comal Springs (runs 1, 2, 3) and San Marcos Springs, TX. Found only in spring runs.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Heterelmis+comalensis
Insect	Fender's Blue Butterfly	Icaricia icarioides fenderi	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Mission Blue Butterfly	Icaricia icarioides missionensis	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
				f=false
Insect	Cassius Blue Butterfly	Leptotes cassius theonus	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Lotis Blue Butterfly	Lycaeides argyrognomon lotis	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Karner Blue Butterfly	Lycaeides melissa samuelis	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Blackline Hawaiian Damselfly	Megalagrion nigrohamatum nigrolineatum	This subspecies (restricted to Oahu) breeds in the slow sections or pools along the mid-reach and headwater sections of perennial upland streams, and in seepage fed pools along overflow channels bordering such streams. Invertivores.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Megalagrion+nigrohamatum+nigrolineatum
Insect	Saint Francis' Satyr Butterfly	Neonympha mitchellii francisci	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Mitchell's Satyr Butterfly	Neonympha mitchellii mitchellii	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCuzbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
				%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	American Burying Beetle	Nicrophorus americanus	Scavenging beetle, feeds on vertebrate carcasses. Species is recorded from grassland, old field shrubland, and hardwood forests. Block Island population occurs on glacial moraine dominated by maritime scrub-shrub community.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Nicrophorus+americanus
Insect	Carson Wandering Skipper	Pseudocopaodes eunus obscurus	Habitat includes only alkaline desert seeps	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Pseudocopaodes+eunus+obscurus
Insect	Laguna Mountains Skipper	Pyrgus ruralis lagunae	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Crambidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	[Unnamed] Ground Beetle	Rhadine exilis	A small, essentially eyeless ground beetle found only in central Texas; a subterranean obligate.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rhadine+exilis
Insect	[Unnamed] Ground Beetle	Rhadine infernalis	A small, essentially eyeless ground beetle found only in central Texas; a subterranean obligate.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rhadine+infernalis
Insect	Delhi Sands Flower-Loving Fly	Rhaphiomidas terminatus abdominalis	Terrestrial habitat. Found in "...fine, sandy soils, often with wholly or partly consolidated dunes". (USFWS, 1993). Restricted to a particular soil type classified as the 'Dehli' series.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rhaphiomidas+terminatus+abdominalis
Insect	Hine's Emerald Dragonfly	Somatochlora hineana	Females oviposit in shallow water usually in seepage marshes, seepage sedge meadows, sedge hummocks, muck along sluggish water, and in small muck-bottomed pools; adults of this species occurs in shallow, calcareous seepage marshes; or marshy margins of small, sluggish, calcareous streams overlaying dolomite bedrock	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Somatochlora+hineana
Insect	Callippe Silverspot Butterfly	Speyeria callippe callippe	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Crambidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Behren's Silverspot	Speyeria zerene behrensi	There are no butterfly species which have an	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidoptera+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1-oXZ0gKoUmLxyBT3nDfl&hl=en&sa=X&ei=OeKCUZbXIsn-0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt%20and%20Cummins%20aquatic%20lepidoptera%20species&f=false

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
	Butterfly		aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	6&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidopter a+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDf&hl=en&sa=X&ei=OeKCUZbXlSn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt %20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Oregon Silverspot Butterfly	Speyeria zerene hippolyta	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidopter a+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDf&hl=en&sa=X&ei=OeKCUZbXlSn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Me rrit %20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Myrtle's Silverspot Butterfly	Speyeria zerene myrtleae	There are no butterfly species which have an aquatic larval stage; there are some aquatic or semi-aquatic moth species in the family Carmbidae (formerly Pyralidae).	http://books.google.com/books?id=UUtEoRejk0AC&pg=PA396&lpg=PA396&dq=Merritt+and+Cummins+aquatic+lepidopter a+species&source=bl&ots=f_YKwZFU5D&sig=3pZRHx1 - oXZ0gKoUmLxyBT3nDf&hl=en&sa=X&ei=OeKCUZbXlSn - 0gH9_YCICQ&ved=0CFUQ6AEwBw#v=onepage&q=Merritt %20and%20Cummins%20aquatic%20lepidoptera%20species&f=false
Insect	Comal Springs Dryopid Beetle	Stygoparnus comalensis	Subterranean obligate, subaquatic beetle. Found only in outlets of Comal Springs and Fern Bank Springs, Hays County, Texas	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Stygoparnus+comalensis
Mammal	Sonoran Pronghorn	Antilocapra americana sonoriensis	Terrestrial herbivore. Non-migrant, lives in mountainous desert of Arizona. Eats cacti and small-leaf trees	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Antilocapra+americana+sonoriensis
Mammal	Point Arena Mountain Beaver	Aplodontia rufa nigra	Feeds on a wide variety of vegetation. Excluded due to location by slow moving streams that would not support a power plant, herbivorous diet, and high altitude location.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Aplodontia+rufa+nigra
Mammal	Wood Bison	Bison bison athabasca	Terrestrial herbivore. Migrant mammal that lives in grasslands. Eats dedges, grasses, willow, and lichen. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Bison+bison+athabasca
Mammal	Pygmy Rabbit	Brachylagus idahoensis	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Brachylagus+idahoensis
Mammal	Gray Wolf	Canis lupus	Terrestrial carnivore that mostly eats other terrestrial species (ungulates, beaver, birds, etc.). Sometimes will hunt for fish but it is not	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action ? spcode=A00D

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			a major part of their diet	
Mammal	Red Wolf	Canis rufus	Terrestrial carnivore that mostly eats other terrestrial species (ungulates, marsh rabbits, birds, etc.). Sometimes will hunt for fish but it is not a major part of their diet	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Canis+rufus
Mammal	Ozark Big-Eared Bat	Corynorhinus (=Plecotus) townsendii ingens	Dwell in caves and hunt in forested areas. Principally feed on moths and other non-aquatic insects	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Corynorhinus+townsendii+ingens
Mammal	Virginia Big-Eared Bat	Corynorhinus (=Plecotus) townsendii virginianus	Dwell in caves and hunt in forested areas. Principally feed on moths and other non-aquatic insects	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Corynorhinus+townsendii+virginianus
Mammal	Utah Prairie Dog	Cynomys parvidens	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Cynomys+parvidens
Mammal	Morro Bay Kangaroo Rat	Dipodomys heermanni morroensis	Terrestrial herbivore. Non-migrant mammal that lives in grasslands/shrublands.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dipodomys+heermanni+morroensis
Mammal	Giant Kangaroo Rat	Dipodomys ingens	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dipodomys+ingens
Mammal	San Bernardino Merriam's Kangaroo Rat	Dipodomys merriami parvus	Terrestrial herbivore. Non-migrant mammal that lives in grasslands/shrublands. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dipodomys+merriami+parvus
Mammal	Fresno Kangaroo Rat	Dipodomys nitratoide exilis	Terrestrial herbivore. Non-migrant mammal that lives in grasslands/shrublands. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dipodomys+nitratoide+exilis
Mammal	Tipton Kangaroo Rat	Dipodomys nitratoide nitratoide	Terrestrial herbivore. Non-migrant mammal that lives in grasslands/shrublands. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dipodomys+nitratoide+nitratoide
Mammal	Stephens' Kangaroo Rat	Dipodomys stephensi (incl. D. cascus)	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Dipodomys+stephensi
Mammal	Carolina Northern Flying Squirrel	Glaucomys sabrinus coloratus	Eats insects, nuts, lichens, fungi, buds, seeds, fruit during season; apparently can subsist on lichens and fungi for extended periods. Spends considerable time foraging on ground. Prefers cavities in mature trees as den sites.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Glaucomys+sabrinus+coloratus
Mammal	Virginia Northern Flying Squirrel	Glaucomys sabrinus fuscus	Diet consists largely of fungi and lichens plus plant and animal material (insects, nuts, buds, seeds, fruit). Spends considerable time foraging on ground. Prefers cavities in mature trees as	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Glaucomys+sabrinus+fuscus

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			den sites.	
Mammal	Gulf Coast Jaguarundi	<i>Herpailurus (=Felis) yagouaroundi cacomitli</i>	Lives in dense, thorny shrublands or woodlands and bunchgrass pastures in southern Texas. Jaguarundis prey mainly on birds, small mammals, and reptiles with birds being the most common prey species type. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/FR00001276%20DRAFT%20RECOVERY%20PLAN%20v8%20clean.pdf
Mammal	Sinaloan Jaguarundi	<i>Herpailurus (=Felis) yagouaroundi tolteca</i>	"Evaluation of all available evidence suggests that the historic and current range of the jaguarundi is not only outside the United States, but outside of the adjoining state of Sonora in Mexico."	http://ecos.fws.gov/docs/recovery_plan/Signed%20J.%20exemption%20concurrence%20memo June 7 2011.pdf
Mammal	Hawaiian Hoary Bat	<i>Lasiurus cinereus semotus</i>	Live on bare rock and cliffs in Hawaii. Eats various insects captured in flight, including many beetles and moths in forest and open wet areas near forests.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Lasiurus+cinereus+semotus
Mammal	Lesser Long-Nosed Bat	<i>Leptonycteris curasoae yerbabuenae</i>	Requires caves and mines for roost sites. Nectar and pollen from the flowers of the saguaro cactus is the primary food source in the early summer and from the flowers of paniculate agaves in late summer to early fall are the primary food sources. Terrestrial herbivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Lasiurus+cinereus+semotus
Mammal	Canada Lynx	<i>Lynx canadensis</i>	Lynx habitat can generally be described as moist boreal forests that have cold, snowy winters and a high-density snowshoe hare prey base	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A073
Mammal	Amargosa Vole	<i>Microtus californicus scirpensis</i>	Terrestrial herbivore. Non-migrant mammal that lives in grasslands/wetlands. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Microtus+californicus+scirpensis
Mammal	Hualapai Mexican Vole	<i>Microtus mexicanus hualpaiensis</i>	Terrestrial herbivore. Non-migrant mammal that lives in grasslands/wetlands. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Microtus+mexicanus+hualpaiensis
Mammal	Florida Salt Marsh Vole	<i>Microtus pennsylvanicus dukecampbelli</i>	Terrestrial herbivore. Non-migrant mammal that lives in saltmarshes. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0ET
Mammal	Black-Footed Ferret	<i>Mustela nigripes</i>	This species is limited to open habitat, the same habitat used by prairie dogs: grasslands, steppe,	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Mustela+nigripes

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			and shrub steppe. Prairie dogs are an important food source; one study (N=82) found prairie dog remains in 91% of analyzed ferret scats. Not reliant on aquatic species for prey	
Mammal	Gray Bat	Myotis grisescens	Dwell in caves and feed mostly upon flying insects, including mayflies and beetles. Foraging is generally parallel to streams, over the water at heights of 2 to 3 m. adapted to forest foraging and rarely is collected in the open or over streams. Excluded due to terrestrial habitat and diet of non-aquatic insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Myotis+grisescens
Mammal	Indiana Bat	Myotis sodalis	Dwell in caves and Forage in riparian areas, upland forests, ponds, and fields, but forested landscapes are the most important habitat in agricultural landscapes. Flying insects are the typical prey items. Forages along river and lake shorelines, in the crowns of trees in floodplains, and in upland forest. Since the Indiana bat mostly lives and hunts in the forest, we are deciding to exclude it from the list of potentially affected species.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Myotis+sodalis
Mammal	Key Largo Woodrat	Neotoma floridana smalli	Optimal habitat is a mature, undisturbed subtropical hardwood (hammock) forest. Eats leaves, but, seeds, and fruit. Terrestrial non-migrant mammal.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Neotoma+floridana+smalli
Mammal	Riparian (=San Joaquin Valley) Woodrat	Neotoma fuscipes riparia	Lives in riparian forest or scrub. Feeds almost exclusively on juniper though are considered generalists herbivores. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/980930a.pdf
Mammal	Key Deer	Odocoileus virginianus clavium	Habitat includes islands with fresh water; prefers pinelands, then hardwood hammocks and mangroves. Uses grassy areas (subdivisions, roadsides) for feeding. May move to adjacent islands during wet weather, returning in dry periods to islands having fresh water. Diet includes red mangrove, black mangrove, Indian mulberry, silver palm, and thatch palm. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Neotoma+floridana+smalli

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Mammal	Columbian White-Tailed Deer	<i>Odocoileus virginianus leucurus</i>	Prefers wet prairie and lightly wooded bottomlands or "tidelands" along streams and rivers; woodlands are particularly attractive when interspersed with grasslands and pastures. Terrestrial, non-migrant herbivore. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Odocoileus+virginianus+leucurus
Mammal	Rice Rat	<i>Oryzomys palustris natator</i>	Primarily live in salt marshes where grassy areas with scattered shrubs and trees exist. Feed on seeds, plants, and insects.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Oryzomys+palustris+nataator
Mammal	Peninsular Bighorn Sheep	<i>Ovis canadensis nelsoni</i>	Habitat includes steep slopes and cliffs, rough and rocky topography, and sparse vegetation. Bighorns may forage or access water on gentle terrain (e.g., alluvial fans and washes) but may travel quickly through valley floors to reach nearby mountains. The diet includes a wide variety of plants, including various shrubs, forbs, cacti, and grasses. Excluded due to habitat elevation and diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ovis+canadensis+nelsoni
Mammal	Sierra Nevada Bighorn Sheep	<i>Ovis canadensis sierrae</i>	Sierra Nevada bighorn sheep inhabit open areas where the land is rocky, sparsely vegetated, and characterized by steep slopes and canyons. These sheep are primarily grazers of grass, sedges, and forbs, but the diet can also include significant amounts of shrubs. Excluded due to habitat elevation and diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ovis+canadensis+sierrae
Mammal	Jaguar	<i>Panthera onca</i>	U.S. habitat includes vegetation communities used in Arizona range from Sonoran desertscrub at lower elevations to sub-alpine mixed conifer in the mountain ranges. Terrestrial carnivore that feeds on mammals, birds, fish, larger reptiles (turtles and caimans).	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A040
Mammal	Pacific Pocket Mouse	<i>Perognathus longimembris pacificus</i>	Lives in fine-grain, sandy substrates in the immediate vicinity of the ocean; coastal strand, coastal dunes, river alluvium, and coastal sage scrub growing on marine terraces. Feeds primarily on seeds of grasses and forbs, plus green vegetation in spring and sometimes insects. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Perognathus+longimembris+pacificus

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
Mammal	Key Largo Cotton Mouse	<i>Peromyscus gossypinus allapaticola</i>	Nests in burrows, tree hollows, crevices in limestone rock, and in or under logs. Feeds mostly on seeds of herbaceous plants. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Peromyscus+gossypinus+allapaticola
Mammal	Choctawhatchee Beach Mouse	<i>Peromyscus polionotus allopheys</i>	Primary habitat includes coastal sand dunes (high primary and secondary, lower interior) with sparse vegetation, including sea oats, bluestem, and bunch grass (<i>PANICUM</i>) on the primary and secondary dunes, and scrubby oaks, dwarfed magnolia, and rosemary on the older dunes. Diet likely includes fruits and seeds of dune plants, especially sea oats and sea rocket, and invertebrates when available. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Peromyscus+polionotus+allopheys
Mammal	Alabama Beach Mouse	<i>Peromyscus polionotus ammobates</i>	The Alabama beach mouse favors dunes with grass/shrub cover: primary dunes, interdune areas, secondary dunes, and scrub dunes. Diet likely includes fruits and seeds of dune plants, especially sea oats and sea rocket, and invertebrates when available. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Peromyscus+polionotus+ammobates
Mammal	Southeastern Beach Mouse	<i>Peromyscus polionotus niveiventris</i>	Southeastern beach mice inhabit sand dunes which are vegetated by sea oats and dune panic grass, on which it feeds. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0C9
Mammal	St. Andrew Beach Mouse	<i>Peromyscus polionotus peninsularis</i>	Lives in the coastal dune and coastal strand. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Peromyscus+polionotus+peninsularis
Mammal	Anastasia Island Beach Mouse	<i>Peromyscus polionotus phasma</i>	Anastasia Island beach mice inhabit sand dunes which are vegetated by sea oats and dune panic grass, on which it feeds. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0BM
Mammal	Perdido Key Beach Mouse	<i>Peromyscus polionotus trissyllepsis</i>	Perdido Key beach mice inhabit sand dunes which are vegetated by sea oats and dune panic grass, on which it feeds. Diet excludes animal-	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Peromyscus+polionotus+trissyllepsis

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			based intakes and detritus and habitat is solely terrestrial	
Mammal	Mariana Fruit (=Mariana Flying Fox) Bat	Pteropus mariannus mariannus	Found only in Guam and Northern Mariana Islands	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=A07X
Mammal	Little Mariana Fruit Bat	Pteropus tokudae	No habitat in 48 coterminous states, AK, or HI	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?scode=A07W
Mammal	Puma (=Mountain Lion)	Puma (=Felis) concolor (all subsp. except coryi)	Habitat includes mountainous or remote undisturbed areas. Primary food is deer in many areas but will also eat various large and small mammals (bighorn sheep, livestock, coyote, squirrels, rabbits, mice, etc.), insects, and reptiles. Excluded due to solely terrestrial habitat and diet	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Puma+concolor
Mammal	Florida Panther	Puma (=Felis) concolor coryi	Lives in heavily forested areas in lowlands and swamps, also upland forests in some parts of range. Most common prey is wild hog, followed by white-tailed deer, raccoon, and armadillo. Excluded due to solely terrestrial habitat and diet	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Puma+concolor+coryi
Mammal	Eastern Puma (=Cougar)	Puma (=Felis) concolor couguar	Can live in swamps, riparian woodlands, mountainous country with good cover of brush or woodland. Feeds on large and small mammals (deer, livestock, coyote, squirrels, rabbits, mice, etc.), insects, and reptiles. Terrestrial carnivore that does not rely on aquatic species as major source of food.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Puma+concolor+couguar
Mammal	Woodland Caribou	Rangifer tarandus caribou	Favors lichen-rich mature forests, open muskegs and bogs, and alpine or, in Quebec/Labrador, high latitude tundra. Relies heavily on lichens as well as low evergreen shrubs, mushrooms, grasses, and sedges. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Rangifer+tarandus+caribou
Mammal	Salt Marsh Harvest Mouse	Reithrodontomys raviventris	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Reithrodontomys+raviventris
Mammal	Delmarva Peninsula Fox Squirrel	Sciurus niger cinereus	Prefers living in deciduous or mixed deciduous-pine forest. Diet includes acorns, nuts/seeds of hickory, beech, walnut, and loblolly pine; buds and flowers of trees, fungi,	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Sciurus+niger+cinereus

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			insects, fruit, and an occasional bird egg. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	
Mammal	Buena Vista Lake Ornate Shrew	Sorex ornatus relictus	A small mammal (shrew) that occupied marshes on the margins of the historical Lake Buena Vista. Feeds on insects and other invertebrates. Extremely limited range.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Sorex+ornatus+relictus
Mammal	Northern Idaho Ground Squirrel	Spermophilus brunneus brunneus	Occurs in dry meadows surrounded by ponderosa pine and Douglas-fir forests. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Sorex+ornatus+relictus
Mammal	Riparian Brush Rabbit	Sylvilagus bachmani riparius	Found in riparian forest with a dense shrub layer. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Sylvilagus+bachmani+riparius
Mammal	Mount Graham Red Squirrel	Tamiasciurus hudsonicus grahamensis	Habitat includes spruce-fir and mixed conifer forests. Diet consists of seeds, conifer cones, nuts, fruits. Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Tamiasciurus+hudsonicus+grahamensis
Mammal	Santa Catalina Island Fox	Urocyon littoralis catalinae	The island fox is a habitat generalist, occurring in all natural habitats on the Channel Islands (California), although it prefers areas of diverse topography and vegetation. Island foxes feed on a wide variety of insect prey, (such as grasshoppers, crickets, and katydids), island deer, deer mice, and native plants. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/Draft%20Recovery%20Plan.4%20Subspecies.Island%20Fox.pdf
Mammal	San Miguel Island Fox	Urocyon littoralis littoralis	The island fox is a habitat generalist, occurring in all natural habitats on the Channel Islands (California), although it prefers areas of diverse topography and vegetation. Island foxes feed on a wide variety of insect prey, (such as grasshoppers, crickets, and katydids), island deer, deer mice, and native plants. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/Draft%20Recovery%20Plan.4%20Subspecies.Island%20Fox.pdf
Mammal	Santa Cruz Island Fox	Urocyon littoralis santacruzae	The island fox is a habitat generalist, occurring in all natural habitats on the Channel Islands (California), although it prefers areas of diverse topography and vegetation. Island foxes feed on a wide variety of insect prey, (such as grasshoppers, crickets, and katydids), island	http://ecos.fws.gov/docs/recovery_plan/Draft%20Recovery%20Plan.4%20Subspecies.Island%20Fox.pdf

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			deer, deer mice, and native plants. Excluded based on terrestrial habitat and diet.	
Mammal	Santa Rosa Island Fox	<i>Urocyon littoralis santarosae</i>	The island fox is a habitat generalist, occurring in all natural habitats on the Channel Islands (California), although it prefers areas of diverse topography and vegetation. Island foxes feed on a wide variety of insect prey, (such as grasshoppers, crickets, and katydids), island deer, deer mice, and native plants. Excluded based on terrestrial habitat and diet.	http://ecos.fws.gov/docs/recovery_plan/Draft%20Recovery%20Plan.4%20Subspecies.Island%20Fox.pdf
Mammal	American Black Bear	<i>Ursus americanus</i>	Black bears inhabit forests and nearby openings, including forested wetlands. Commonly including fruits, insects, and carrion; also garbage. Will eat fish and other aquatic species but has many other food sources	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ursus+americanus
Mammal	Louisiana Black Bear	<i>Ursus americanus luteolus</i>	Black bears inhabit forests and nearby openings, including forested wetlands. Commonly including fruits, insects, and carrion; also garbage. Will eat fish and other aquatic species but has many other food sources	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Ursus+americanus+luteolus
Mammal	San Joaquin Kit Fox	<i>Vulpes macrotis mutica</i>	Lives in grasslands/woodlands. Diet consists of many food items such as nocturnal rodents, carrion, birds, reptiles, insects, and fruits. Exclude due to terrestrial habitat and diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Vulpes+macrotis+mutica
Mammal	Preble's Meadow Jumping Mouse	<i>Zapus hudsonius preblei</i>	Preble's meadow jumping mouse inhabits well developed riparian habitat with adjacent, relatively undisturbed grassland communities, and a nearby water source. According to fecal analysis, diet primarily consists of insects and fungi after emerging from hibernation in May, shifts to fungi, moss, and pollen during mid-summer (July and August), with insects again added in September. Though it lives in a riparian habitat, it a terrestrial animal with minimal aquatic food sources.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=A0C2
Reptile	American Alligator	<i>Alligator mississippiensis</i>	Their conservation status is secure; listed by USFWS as "Threatened" throughout entire range due to similarity of appearance to other endangered or threatened crocodilians. American alligators inhabit fresh and brackish	

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			marshes, ponds, lakes, rivers, swamps, bayous, canals, and large spring runs. They often bask on partially submerged logs or on land next to the water. Alligators dig dens in river or lake margins or in marshes; they spend cold winter and drought periods in the den.	
Reptile	St. Croix Ground Lizard	Ameiva polops	Found only on beaches and forests of two small islands - Green Cay and Protestant Cay near St. Croix (USVI); insectivore	http://ecos.fws.gov/docs/recovery_plan/840329.pdf
Reptile	Culebra Island Giant Anole	Anolis roosevelti	Reported only in forests on Culebra Island PR; little else is known; latest survey suggest that species has gone extinct	http://ecos.fws.gov/docs/recovery_plan/830128.pdf
Reptile	Bog (=Muhlenberg) Turtle	Clemmys muhlenbergii: South Atlantic Coast	Bog turtles inhabit slow, shallow, muck-bottomed rivulets of sphagnum bogs, calcareous fens, marshy/sedge-tussock meadows, spring seeps, wet cow pastures, and shrub swamps; the habitat usually contains an abundance of sedges or mossy cover.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Clemmys+muhlenbergii+
Reptile	Bog (=Muhlenberg) Turtle	Clemmys muhlenbergii: All except South Atlantic Coast	Bog turtles inhabit slow, shallow, muck-bottomed rivulets of sphagnum bogs, calcareous fens, marshy/sedge-tussock meadows, spring seeps, wet cow pastures, and shrub swamps; the habitat usually contains an abundance of sedges or mossy cover.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Clemmys+muhlenbergii+
Reptile	New Mexican Ridge-Nosed Rattlesnake	Crotalus willardi obscurus	This is a montane woodland species found in Madrean evergreen woodland and Petran montane conifer forests, using the bottoms of steep, rocky canyons with intermittent streams or talus slopes. Elevations range from 5,000 to 8,500 feet.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=C01S
Reptile	Mona Ground Iguana	Cyclura cornuta stejnegeri	Species is restricted to Mona Island (5550 ha, rocky limestone island) located between PR and Hispaniola.	http://ecos.fws.gov/docs/recovery_plan/840419b.pdf
Reptile	Eastern Indigo Snake	Drymarchon corais couperi	Habitat includes sandhill regions dominated by mature longleaf pines, turkey oaks, and wiregrass; flatwoods; most types of hammocks; coastal scrub; dry glades; palmetto flats; prairie; brushy riparian and canal corridors; and wet fields (Matthews and Moseley 1990, Tennant 1997, Ernst and Ernst 2003); carnivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Drymarchon+corais+couperi

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
Reptile	Puerto Rican Boa	<i>Epicrates inornatus</i>	Habitat ranges from wet montane to subtropical dry forest (restricted to Puerto Rico); diet consists of birds, small mammals, and lizards	http://ecos.fws.gov/docs/recovery_plan/PR%20boa%20recov%20plan.pdf
Reptile	Virgin Islands Tree Boa	<i>Epicrates monensis granti</i>	Found on several islands ; only 13 specimens found: on the Puerto Rico Bank east of Puerto Rico, feeds on lizards	http://ecos.fws.gov/docs/recovery_plan/860327b.pdf
Reptile	Mona Boa	<i>Epicrates monensis monensis</i>	Species is restricted to Mona Island (5550 ha, rocky limestone island) located between PR and Hispaniola; eats lizards, poorly understood (12 specimens collected)	http://ecos.fws.gov/docs/recovery_plan/840419a.pdf
Reptile	Bluetail Mole Skink	<i>Eumeces egregius lividus</i>	Sand pine-rosemary scrub or, less frequently, longleaf pine-turkey oak association (sandhill); restricted to Florida; open, loose St. Lucie fine sands. Within scrub areas, occupies localized pockets of sufficient leaf litter and moisture to provide abundant food and nesting sites. Eggs are laid probably in a shallow nest cavity in the soil; invertivores	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Eumeces+egregius+lividus
Reptile	Blunt-Nosed Leopard Lizard	<i>Gambelia silus</i>	This species inhabits semiarid grasslands, alkali flats, low foothills, canyon floors, large washes, and arroyos, usually on sandy, gravelly, or loamy substrate, sometimes on hardpan. It is common where there are abundant rodent burrows, rare or absent in dense vegetation or tall grass; carnivore and invertivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gambelia+silus
Reptile	Desert Tortoise	<i>Gopherus agassizii</i> : Southern Arizona and east of the Colorado River	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gopherus+agassizii
Reptile	Desert Tortoise	<i>Gopherus agassizii</i> : All except Southern Arizona and east of the Colorado River	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gopherus+agassizii
Reptile	Gopher Tortoise	<i>Gopherus polyphemus</i>	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Gopherus+polyphemus
Reptile	Ringed Map Turtle	<i>Graptemys oculifera</i>	Most abundant in streams with moderate to fast current, numerous basking logs, nearby sand and gravel bars, and channel wide enough to allow sun to reach basking logs from 1000-1600 hrs (McCoy and Vogt 1980, Dickerson	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Graptemys+oculifera

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			and Reine 1996). Not in tributaries or tidal areas. Invertivore.	
Reptile	Alameda Whipsnake (=Striped Racer)	Masticophis lateralis euryxanthus	Chaparral foothills, shrublands with scattered grassy patches, rocky canyons and watercourses, and adjacent habitats. Underground or under cover when inactive. Lays eggs probably most often in abandoned rodent burrows; carnivore and invertivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Masticophis+lateralis+euryxanthus
Reptile	Sand Skink	Neoseps reynoldsi	This species occurs only on Florida's central ridges, at elevations of 27 m or more, in St. Lucie fine and Lakeland yellow sands; invertivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Neoseps+reynoldsi
Reptile	Atlantic Salt Marsh Snake	Nerodia clarkii taeniata	Found in brackish and salt marshes, shallow tidal creeks and pools, often in association with glasswort (Salicornia) and fiddler crab burrows. Also inhabits areas with black mangrove; Found only in a limited coastal strip in Volusia County; fishes are the primary food - most active at night during low tide.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Nerodia+clarkii+taeniata
Reptile	Copperbelly Water Snake	Nerodia erythrogaster neglecta	Swampy woodlands, river bottoms (Conant and Collins 1991). Lowland swamps, oxbow lakes in floodplains, brushy ditches, and other warm, quiet waters; wooded lakes, streams, or other permanent waters; and wooded corridors between these habitats (USFWS 1993). Diet includes primarily aquatic species such as frogs, tadpoles, salamanders, crayfish, fishes, and other aquatic invertebrates. Fishes are not a common item in the diet, probably evidently because they are uncommon or absent from the snakes typical temporary-water habitat.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Nerodia+erythrogaster+neglecta
Reptile	Plymouth Red-Bellied Turtle	Pseudemys rubriventris bangsi	Carnivore, Herbivore, Invertivore, Piscivore	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Pseudemys+rubriventris+bangsi
Reptile	Monito Gecko	Sphaerodactylus micropithecus	Species is restricted to Mona Island (5550 ha, rocky limestone island) located between PR and Hispaniola; eats lizards, poorly understood (12 specimens collected)	http://ecos.fws.gov/docs/recovery_plan/860327a.pdf
Reptile	Flattened Musk Turtle	Sternotherus depressus	Optimal habitat free-flowing creek or small river with pools about 1 m deep or more, hiding places among rocks, abundant mollusks, low	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Sternotherus+depressus

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			silt load and deposits, moderate temperature; also impoundments with similar characteristics (Mount 1981). Preferred habitat seems to be clear, rock-bottomed to sandy, permanent streams above fall line\ Invertivore.	
Reptile	Giant Garter Snake	Thamnophis gigas	Habitat of this highly aquatic species includes primarily marshes and sloughs, sometimes low-gradient streams, ponds, and small lakes, with cattails, bulrushes, willows, or other emergent or water-edge vegetation usually present and used for basking and cover (California Department of Fish and Game 1990, USFWS 1993, Rossman et al. 1996, Stebbins 2003). Because of the direct loss of natural habitat, this snake now relies heavily on rice fields in the Sacramento Valley, but it also uses managed marsh areas in various national wildlife refuges and state wildlife areas (USFWS 1999). The giant gartersnake is absent from large rivers and other waters with populations of large, introduced, predatory fishes, and from wetlands with sand, gravel, or rock substrates (see USFWS 1993). Carnivore, invertivore, piscivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Thamnophis+gigas
Reptile	San Francisco Garter Snake	Thamnophis sirtalis tetrataenia	Near freshwater marshes, ponds, and slow-moving streams; upland areas near pond/marsh habitat are important in fall and winter (California Department of Fish and Game 1990); Carnivore, invertivore, piscivore.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Thamnophis+sirtalis+tetrataenia
Snail	Oahu Tree Snails	Achatinella spp.	Found in mountainous forests and shrublands on island of Oahu Hawaii; no inland facilities in-scope of the rule	http://ecos.fws.gov/docs/recovery_plan/920630.pdf
Snail	Painted Snake Coiled Forest Snail	Anguispira picta	Terrestrial snail that lives on cliff faces and bare rock. Exclude due to terrestrial habitat and diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Anguispira+picta
Snail	Tumbling Creek Cavesnail	Antrobia culveri	Subterranean obligate, benthic cavesnail. Known only from Tumbling Creek Cave in SW MO.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Antrobia+culveri
Snail	Iowa Pleistocene Snail	Discus macclintocki	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Discus+macclintocki
Snail	White Abalone	Haliotis sorenseni	A deep-sea mollusk that reaches a length of 150	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Haliotis+sorenseni

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			to 200 mm. found at depths of greater than 26 meters amongst rocky reefs with understory kelps.	hName=Haliotis+sorenseni
Snail	Morro Shoulderband (=Banded Dune) Snail	Helminthoglypta walkeriana	A terrestrial snail that lives in grassland or woodland areas. Exclude due to terrestrial habitat and diet.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Helminthoglypta+walkeriana
Snail	Banbury Springs Limpet	Lanx sp.	Endemic to four coldwater spring complexes in Idaho; limited habitat range within springs	http://ecos.fws.gov/docs/federal_register/ft2184.pdf
Snail	Magazine Mountain Shagreen	Mesodon magazinensis	Incredibly limited habitat - a single population inhabits a rock slide (in rock debris) on the north side only of a mountain in Arkansas on an approximately 60% slope. Possibly extinct.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Mesodon+magazinensis
Snail	Stock Island Tree Snail	Orthalicus reses (not incl. nesodryas)	Diet excludes animal-based intakes and detritus and habitat is solely terrestrial	http://ecos.fws.gov/docs/five_year_review/doc2582.pdf
Snail	Kanab Ambersnail	Oxyloma haydeni kanabensis	Freshwater habitat. Found in springs and seeps at base of sandstone or limestone cliffs in Utah and Arizona.	http://ecos.fws.gov/speciesProfile/profile/speciesProfile.action?spcode=G01M
Snail	Noonday Globe	Patera clarki nantahala	Terrestrial habitat. It is known from high cliffs (1900 to 3100 feet, in a half mile stretch) along the southeast bank of the Nantahala River in the Nantahala Gorge in North Carolina.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Patera+clarki+nantahala
Snail	Virginia Fringed Mountain Snail	Polygyriscus virginianus	Terrestrial habitat. Burrowing calcifile (10 to 45 cm deep) that is not found in leaf litter but burrows in loose, damp, dolomitic limestone talus mixed with rootlets and clay (Batie, 1987a; 1987b; 1987c) at elevation.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Polygyriscus+virginianus
Snail	Armored Snail	Pyrgulopsis (=Marstonia) pachyta	Freshwater habitat. Known only from two creeks (Limestone and Piney on the Tennessee River drainage) near Mooresville, Limestone Co., Alabama (Burch, 1989; Hershler, 1994). These creeks were confluent before the lower ends were impounded by Wheeler Reservoir. Snails were found in shallow, still water along the edge of pools on tree roots and detritus (Thompson, 1977).	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Pyrgulopsis+pachyta
Snail	Roswell Springsnail	Pyrgulopsis roswellensis	Freshwater habitat. Thermal spring snail of the family Hydrobiidae from the Roswell area of the Pecos River Valley. Found on pebbles, gypsum silt and to a lesser extent mud and	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Pyrgulopsis+roswellensis

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Taxonomic Grouping	Common Name	Scientific Name	Why Exclude?	Link to Exclude
			submerged vegetation in seeps and high volume springs and spring runs.	
Snail	Chittenango Ovate Amber Snail	Succinea chittenangoensis	Terrestrial habitat. Inhabits the wet cliff walls and talus in a ravine at the base of Chittenango Falls (a 167 foot waterfall). The ravine ledges comprise an early successional sere that is periodically rejuvenated to a bare substrate by floodwaters.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Succinea+chittena ngoensis
Snail	Flat-Spired Three-Toothed Snail	Triodopsis platysayoides	Terrestrial snail. Crevices of exposed sandstone and talus of rock and caves; also feed in deep litter at base of major rocks. Close association with massive sandstone outcrops and talus; also at cave mouths and on limestone along Cheat River in WV.	http://www.natureserve.org/explorer/servlet/NatureServe?searchName=Triodopsis+platysayoides

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Table 9-2: Facility Overlaps with Habitat and Critical Habitat

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
(Ky Facility) C/O Newport Steel Corp. - Newport	Manufacturer	KY	20	0
3F Chimica Americas Inc	Manufacturer*	NC	1	0
3m Aston	Manufacturer*	PA	2	0
3m Co - Cordova	Manufacturer*	IL	8	0
3m Co - Cynthiana	Manufacturer*	KY	4	0
3m Co - Greenville	Manufacturer*	SC	2	0
3m Co - Tonawanda	Manufacturer*	NY	3	0
3m Co Bedford Park	Manufacturer*	IL	4	0
3m Company	Manufacturer*	AL	41	0
3m Cottage Grove Center	Manufacturer*	MN	8	0
3m Drug Delivery Systems	Manufacturer*	CA	7	0
3m Hartford City	Manufacturer*	MA	7	0
3v Inc	Manufacturer*	SC	4	0
3v, Inc	Manufacturer	SC	3	0
4100 Grand Ave	Manufacturer*	PA	9	0
A & K Cooperage Co Inc	Manufacturer*	MO	5	0
A B Brown	Generator	IN	13	0
A O Smith Corp Protective Coatings Div	Manufacturer*	KY	20	0
Abbott Laboratories - North Ch Icago Facility	Manufacturer*	IN	2	0
Abbott Labs Pharmaceutical Research Ctr	Manufacturer*	IL	2	0
Abibow Us Inc - Calhoun Operations	Manufacturer*	TX	12	0
Abibow Us Inc Coosa Pines Facility	Manufacturer*	AL	25	0
Abington Reldan Metals Llc	Manufacturer*	PA	2	0
Abitibi Consolidated Corp Lufkin Mill	Manufacturer*	TX	3	0
Abitibi-Consolidated Corp	Manufacturer*	TX	3	0
Abitibibowater Forest Products Div Goodwater Sawmi	Manufacturer*	AL	23	0
Able Manufacturing & Assembly Llc	Manufacturer*	KY	3	0
Absolute Energy Llc	Manufacturer*	IA	5	0
Accellent Collegeville	Manufacturer*	PA	2	0
Accurate Plastics Corporation	Manufacturer*	MS	2	0
Accuride Corp	Manufacturer*	KY	13	0
Acme Romac Jl Inc.	Manufacturer*	NJ	0	0
Action Products	Manufacturer*	MO	4	0
Ada Carbon Solutions (Red River) Llc - G	Manufacturer*	LA	1	0
Adcom Wire Co	Manufacturer*	FL	6	0
Adell Plastics	Manufacturer*	MI	3	0
Adhesives Research Inc	Manufacturer*	PA	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Adm	Manufacturer*	IL	5	0
Adm Corn Processing	Manufacturer	IA	8	0
Adm Corn Processing	Manufacturer	IA	8	0
Adm Development Products	Manufacturer*	IL	5	0
Adm Grain Company	Manufacturer*	OH	1	0
Adm Milling Co	Manufacturer*	NC	1	0
Adm Milling Co Carthage Flour Mill	Manufacturer*	MO	3	0
Adm Milling Co.	Manufacturer*	MO	4	0
Adm Polymer	Manufacturer*	IL	8	0
Adm Southern Cellulose	Manufacturer*	WA	27	0
Adm Southport	Manufacturer*	NC	8	0
Adm West Complex-Stratas Foods	Manufacturer*	IL	5	0
Adron Inc	Manufacturer*	NJ	2	0
Advanced Aromatics Llc	Manufacturer*	TX	3	0
Advanced Chemical Co	Manufacturer*	RI	4	0
Aerofil Technology Incorporated	Manufacturer*	MO	7	0
Aerotherust Corporation	Manufacturer*	FL	6	0
Ag Processing Inc	Manufacturer*	MO	3	0
Age International Inc.	Manufacturer*	KY	11	0
Agra Resources Coop (Dba Poet Glenville)	Manufacturer*	MO	1	0
Agri Source Fuels Llc	Manufacturer*	GA	3	0
Agrifos Fertilizer Pasadena	Manufacturer*	CA	3	0
Agrium Advanced Technologies Inc & Loveland Produc	Manufacturer*	NJ	3	0
Agrium Kenai Nitrogen Operations	Manufacturer*	AL	1	0
Agrium North Bend Nitrogen Operations	Manufacturer*	OH	19	0
Agrium U.S. Inc Homestead Terminal	Manufacturer*	NE	2	0
Agrium Us Inc	Manufacturer*	KS	5	0
Agrium Us Inc Kennewick Fertilizer Operation	Manufacturer*	AR	8	3
Ahlstrom Fiber Composites (Dexter Cogeneration Fac)	Generator	CT	5	0
Ahlstrom Filtration Llc	Manufacturer*	IN	5	0
Ahlstrom Mt Holly Sprgs Paper Mfg	Manufacturer*	PA	0	0
Ahlstrom Nonwovens	Manufacturer*	CT	5	0
Air Liquide	Manufacturer*	GA	6	0
Air Liquide America Corp	Manufacturer*	IL	5	0
Air Liquide America Corp.	Manufacturer*	MD	4	0
Air Liquide America Corporation	Manufacturer*	NJ	1	0
Air Liquide Electronics Morrisville Fac	Manufacturer*	PA	2	0
Air Liquide Ind Us Lp Saint Marys	Manufacturer*	SC	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Air Liquide Large Industries Us Lp - Taft Asu	Manufacturer*	MD	3	0
Air Prod & Chem Tamaqua Plt	Manufacturer*	PA	2	0
Air Products & Chemicals Inc	Manufacturer*	LA	4	0
Air Products & Chemicals Inc (New Orleans La Faci	Manufacturer*	LA	6	0
Air Products & Chemicals Inc.	Manufacturer*	MD	3	0
Air Products & Chemicals Inc. Creighton Pa Fac.	Manufacturer*	PA	3	0
Air Products Lp	Manufacturer*	TX	3	0
Air Products Manufacturing Corp	Manufacturer*	LA	3	0
Air Products Pasadena Plant	Manufacturer*	WV	3	0
Air Products Polymers L P	Manufacturer*	SC	2	0
Airgas Speciality Gases Port Allen	Manufacturer*	LA	1	0
Airo Die Casting West Plt	Manufacturer*	SC	1	0
Ajay North America Llc	Manufacturer*	GA	8	0
Ajinomoto Heartland Inc	Manufacturer*	IL	7	0
Ajinomoto North America Inc	Manufacturer*	NJ	2	0
Ak Steel Corp	Manufacturer*	OH	1	0
Ak Steel Corp Mansfield Wo Rks	Manufacturer*	OH	4	0
Ak Steel Corp - Zanesvi Lle Works	Manufacturer*	OH	12	0
Ak Steel Corp Coshocton Works	Manufacturer*	OH	12	0
Ak Steel Main Fac	Manufacturer*	PA	2	0
Ak Steel Rockport Works	Manufacturer*	IN	13	0
Akcros Chemicals Inc	Manufacturer*	NJ	0	0
Akzo Nobel Chemicals Inc.	Manufacturer*	NY	2	0
Akzo Nobel Functional Chemical S Llc	Manufacturer*	AL	14	0
Akzo Nobel Polymer Chemicals Llc	Manufacturer*	TX	3	0
Akzo Nobel Surface Chemistry Llc	Manufacturer*	IL	4	0
Al State Docks Choctaw Point	Manufacturer*	FL	14	0
Al-Corn Clean Fuel	Manufacturer*	MN	1	0
Alabama Recycling	Manufacturer*	AL	21	0
Alabama River Newsprint Co	Manufacturer*	AL	24	0
Alabama Specialty Products	Manufacturer*	AL	25	0
Alabama Timber Industries Inc	Manufacturer*	AL	25	0
Alabama Wire Prod	Manufacturer*	LA	17	0
Alac Lake Charles Asu	Manufacturer*	LA	3	0
Alac Savannah Asu	Manufacturer*	IA	14	0
Alamac American Knits Limited Liability Company	Manufacturer*	NC	0	0
Albany	Generator	NY	1	0
Albemarle Bayport Plant	Manufacturer*	TX	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Albemarle Corp	Manufacturer*	SC	2	0
Albemarle Corp Pasadena Plant	Manufacturer*	TX	3	0
Albemarle Corp South Plant	Manufacturer*	AR	2	0
Albemarle Corp West Plant	Manufacturer*	AR	2	0
Albemarle Tyrone Chem Plt	Manufacturer*	PA	0	0
Alberdingk Boley Inc	Manufacturer*	NC	1	0
Albright	Generator	WV	1	0
Alcan Primary Metal Sebree Works	Manufacturer*	MD	8	0
Alcan Rolled Products Company	Manufacturer	NY	2	0
Alcoa Aluminum Facility East & West Plants	Manufacturer*	OH	0	0
Alcoa Inc	Manufacturer*	WA	3	0
Alcoa Inc Lebanon Works	Manufacturer*	PA	2	0
Alcoa Inc.	Manufacturer	TX	9	0
Alcoa Inc.-North Plant	Manufacturer*	WA	27	0
Alcoa Inc.-Rockdale Operations	Manufacturer	TX	3	0
Alcoa Inc.-South Plant	Manufacturer*	TX	27	0
Alcoa Industrial Chemicals Arkansas Operations	Manufacturer	AR	4	0
Alcoa Intalco Works	Manufacturer*	WV	11	1
Alcoa Lafayette Operations	Manufacturer*	KY	17	0
Alcoa Mill Products	Manufacturer*	PA	3	0
Alcoa Technical Center	Manufacturer*	SC	3	0
Alcoa Warrick Operations	Manufacturer*	KY	13	0
Alcoa Wenatchee Works	Manufacturer*	WA	10	3
Alcoa World Alumina Llc	Manufacturer*	TX	4	0
Alcoa, Inc.	Manufacturer	NY	0	0
Alcore Inc - Lakeside	Manufacturer*	ME	3	0
Aleris Recycling Bens Run Llc	Manufacturer*	WV	8	0
Aleris Recycling Inc	Manufacturer*	KY	6	0
Aleris Rolled Products Inc	Manufacturer*	KY	13	0
Aleris Specialty Products Inc	Manufacturer *	OH	0	0
Aleris Specification Alloys Inc	Manufacturer*	AL	25	0
Alex C Fergusson Inc	Manufacturer*	RI	0	0
Alexandria Sawmill	Manufacturer*	LA	2	0
Alexion Biopharmaceutical Manufacturing	Manufacturer*	SC	4	0
Alfa Laval Champ Inc	Manufacturer*	IL	2	0
Alfab Inc	Manufacturer*	AL	19	0
Allegheny Ludlum Bagdad	Manufacturer*	PA	1	0
Allegheny Ludlum Corp	Manufacturer*	PA	9	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Allegheny Ludlum Corporation	Manufacturer	PA	1	0
Allegheny Ludlum Corporation	Manufacturer	PA	3	0
Allegheny Ludlum Llc	Manufacturer*	PA	3	0
Allegheny Ludlum Llc Latrobe Plant	Manufacturer*	PA	1	0
Allegheny Ludlum Steel Strip Plant	Manufacturer*	DE	3	0
Allegheny Technologies Midland Plant	Manufacturer*	PA	9	0
Allegheny Wood Products Inc Mill 5	Manufacturer*	AL	1	0
Allegheny Wood Products Inc Mill 7	Manufacturer*	PA	4	0
Allegheny Wood Products Inc Mill 8	Manufacturer*	NC	2	0
Allegheny Wood Products Inc Mill 9	Manufacturer*	WV	0	0
Allen	Generator	TN	10	0
Allen Tank Incorporated	Manufacturer*	LA	2	0
Alliance Foam Technologies Llc - Centralia	Manufacturer*	MO	1	0
Alliance Refinery C/O Bp Exploration And Oil Co.	Manufacturer	LA	3	0
Alliance Tubular Holdings Llc	Manufacturer*	LA	10	0
Alliance Tubular Products Llc	Manufacturer*	OH	3	0
Alliant Techsystems Ferrulmatic Operations	Manufacturer*	NJ	2	0
Alliant Techsystems Inc (New River Energetics)	Manufacturer*	WA	1	0
Allied Tube & Conduit	Manufacturer*	AR	2	0
Allied Tube And Conduit Corp	Manufacturer*	IL	2	0
Allied Universal Corp	Manufacturer*	GA	6	0
Alliedsignal Inc.	Manufacturer	SC	2	0
Allworth Llc	Manufacturer*	AL	21	0
Alma	Generator	WI	6	0
Almatis Inc - Bauxite Arkansas	Manufacturer*	AR	4	0
Almond Brothers Lumber Co Inc	Manufacturer*	LA	1	0
Alon Refining Krotz Springs Inc	Manufacturer*	LA	4	0
Alon Usa - Big Spring Refinery	Manufacturer*	TX	3	0
Alphapet Inc.	Manufacturer*	AL	41	0
Alpharma Llc	Manufacturer*	AR	8	0
Alpharma Pharmaceuticals Corp @ Centennial Ind Pk	Manufacturer*	NJ	0	0
Altenburg Hardwood Lumber	Manufacturer*	MO	4	0
Alton Steel Inc	Manufacturer*	IL	5	0
Alumax Mill Products Texarkana	Manufacturer*	WA	3	0
Alumax Of South Carolina Inc	Manufacturer*	TN	3	0
Aluminum Co Of America Badin	Manufacturer*	NY	1	0
Amalgamated Sugar Co	Manufacturer*	ID	2	0
Amalgamated Sugar Co Llc	Manufacturer*	ID	5	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Amalgamated Sugar Co Llc Nampa	Manufacturer*	MI	3	0
Amax Metals Recovery Inc.	Manufacturer*	LA	6	0
Amcol Health & Beauty Solutions Inc	Manufacturer*	LA	2	0
Amcor Flexibles Inc	Manufacturer*	NJ	2	0
Amerbelle Textiles	Manufacturer*	GA	5	0
Amerchol Greensburg	Manufacturer*	LA	2	0
American Appliance Products	Manufacturer*	WA	13	0
American Biltrite Inc	Manufacturer*	NJ	2	0
American Chemet Corp	Manufacturer*	NC	1	0
American Chrome & Chemicals Inc	Manufacturer*	TX	6	0
American Colloid Company	Manufacturer*	AL	11	0
American Compressed Steel Inc.	Manufacturer*	MO	2	0
American Crystal Sugar	Manufacturer	MN	0	0
American Crystal Sugar Co	Manufacturer*	MN	1	0
American Crystal Sugar Co.	Manufacturer	ND	1	0
American Crystal Sugar Company-Drayton Plant	Manufacturer*	NE	1	0
American Distillation Incorporated	Manufacturer*	NC	8	0
American Eagle Paper Mills	Manufacturer*	PA	0	0
American Fibers And Yarns	Manufacturer*	NC	3	0
American Foam Technologies	Manufacturer*	WV	0	0
American Iron Oxide Co Portage	Manufacturer*	MD	3	0
American Iron Reduction - Dri Plant	Manufacturer	LA	2	0
American Optical Corporation, Unit 1	Manufacturer	MA	0	0
American Pacific Corp Utah Operations	Manufacturer*	UT	1	0
American Polymers	Manufacturer*	MD	0	0
American Refining Group - Groundwater Cleanup	Manufacturer*	PA	3	0
American Refining Group Inc	Manufacturer*	PA	3	0
American Spring Wire Corp	Manufacturer*	IL	7	0
American Standard Brands Fiat Products	Manufacturer*	KY	24	0
American Sugar Domino Sugar Refinery	Manufacturer*	NY	3	0
American Sugar Refining Inc	Manufacturer*	MD	4	0
American Sugar Refining Inc.	Manufacturer*	TX	3	0
American Tissue Mills Of Nh	Manufacturer*	NH	3	0
American Tubing Inc	Manufacturer*	AR	4	0
American Walnut Company - St. Joseph	Manufacturer*	MO	3	0
Americas Styrenics Llc - Joliet Site	Manufacturer*	IL	4	0
Americas Styrenics Polystyrene Plant	Manufacturer*	CT	4	0
Ameristeel Corp	Manufacturer*	FL	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Ameristeel Tampa Mill Site	Manufacturer*	FL	5	0
Ames Goldsmith	Manufacturer*	NY	1	0
Ames Goldsmith Corp	Manufacturer*	NY	1	0
Ames True Temper Hdwr Union City	Manufacturer*	PA	4	0
Ametek Westchester Plastics Div	Manufacturer*	PA	2	0
Amfine Chemical Corporation	Manufacturer*	KY	10	0
Amg Vanadium Inc	Manufacturer*	OH	1	0
Amgen Incorporated	Manufacturer*	CO	2	0
Amgen Manufacturing Ltd	Manufacturer*	PR	2	2
Amoco Oil Co	Manufacturer*	MI	3	0
Ampac Fine Chemicals Llc	Manufacturer*	CO	8	0
Amersand Gilman Hydro	Manufacturer*	VT	2	0
Amri Rensselaer	Manufacturer*	NY	1	0
Anamet Electrical Inc	Manufacturer*	IL	8	0
Anchor Fabricators Inc	Manufacturer*	OH	1	0
Anclote	Generator	FL	10	0
Anderson Custom Processing Inc	Manufacturer*	MO	0	0
Angus Chemical Co	Manufacturer*	LA	4	0
Animas	Generator	NM	7	0
Anip Acquisition Company	Manufacturer*	MS	10	0
Anthony Forest Products Co Urbana	Manufacturer*	AR	3	0
Anthony Forest Products Co.	Manufacturer*	LA	2	0
Anthony Timberlands Inc	Manufacturer*	AR	6	0
Antioch (Ca) Facility C/O Gaylord Container Corp.	Manufacturer	CA	15	1
Aoc Llc	Manufacturer*	FL	3	0
Aoc Llc Tennessee Plant	Manufacturer*	TN	5	0
Apache Nitrogen Products Inc	Manufacturer*	CA	10	0
Apc Paper Co Of New York	Manufacturer*	NY	1	0
Apex Material Technologies Llc	Manufacturer*	IL	4	0
Apollo Chemical Corporation	Manufacturer*	NC	1	0
Apothecus Pharmaceutical Corporation	Manufacturer*	NY	3	0
App Pharmaceutical	Manufacturer*	NY	3	0
Appalachian Timber Services Llc	Manufacturer*	WV	5	0
Appleton Coated Llc Locks Mill	Manufacturer*	AL	0	0
Appleton Papers Inc	Manufacturer*	PA	0	0
Applied Analytical	Manufacturer*	NC	2	0
Apw Mayville Llc	Manufacturer*	NC	2	0
Arapahoe	Generator	CO	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Arcadia Refining & Marketing Co Lp	Manufacturer*	LA	1	0
Arcal Chemicals	Manufacturer*	MD	2	0
Arcelor Mittal/Indiana Harbor Long Carbon	Manufacturer*	KY	3	0
Arcelor Pine Bluff	Manufacturer*	IN	2	0
Arcelormittal Burns Harbor Llc	Manufacturer*	IN	3	0
Arcelormittal Cleveland Inc	Manufacturer*	OH	0	0
Arcelormittal Hennepin	Manufacturer*	IL	6	0
Arcelormittal Indiana Harbor Llc	Manufacturer*	IN	3	0
Arcelormittal Lackawanna Llc	Manufacturer*	NY	1	0
Arcelormittal Laplace Steel Mill	Manufacturer*	MD	4	0
Arcelormittal Minorca Mine Inc	Manufacturer*	MN	0	0
Arcelormittal Plate Llc (Gary Plate)	Manufacturer*	IN	3	0
Arcelormittal Plate Llc Coatesville Facility	Manufacturer*	PA	2	0
Arcelormittal Plate Llc Conshohocken Facility	Manufacturer*	PA	2	0
Arcelormittal Riverdale Inc	Manufacturer*	IL	3	0
Arcelormittal Steelton Llc	Manufacturer*	PA	0	0
Arcelormittal Tubular Products Shelby Inc	Manufacturer*	OK	4	0
Arcelormittal Warren Inc	Manufacturer*	OH	3	0
Arch Chemicals Inc	Manufacturer*	KY	8	0
Archer Daniels Midland Co	Manufacturer*	IL	6	0
Archer Daniels Midland Co.	Manufacturer	IL	6	0
Archimica Inc	Manufacturer*	MO	2	0
Arclin Surfaces Llc	Manufacturer*	WA	13	2
Arclin Usa Inc Winnfield	Manufacturer*	LA	1	0
Arclin Usa Llc	Manufacturer*	AL	17	1
Ardell Industries Inc	Manufacturer*	NY	6	0
Arichem Llc	Manufacturer*	AL	19	0
Arizona Chemical	Manufacturer*	OH	6	0
Arizona Chemical Co Llc	Manufacturer*	FL	8	1
Arizona Chemical Llc	Manufacturer*	GA	5	0
Ark Aluminum Alloys	Manufacturer*	AR	2	0
Arkansas Nuclear One	Generator	AR	2	0
Arkansas Steel Associates Llc	Manufacturer*	AR	5	0
Arkema	Manufacturer*	AL	14	0
Arkema Coating Resins	Manufacturer*	IL	2	0
Arkema Coatings & Resins	Manufacturer*	IL	4	0
Arkema Inc	Manufacturer*	TX	3	0
Arkwright Advanced Coating	Manufacturer*	SC	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Armstrong	Generator	PA	5	0
Armstrong Hardwood Flooring Co - Witt Plant	Manufacturer*	AR	5	0
Armstrong Hardwood Flooring Co Center Tx	Manufacturer*	VA	3	0
Armtec Countermeasures Co	Manufacturer*	AR	6	0
Arneson Timber Company Incorporated	Manufacturer*	MO	6	0
Arnette Ltd Sali	Manufacturer*	MO	4	0
Arnold Magnetic Technologies - Arnold Engineering	Manufacturer*	IN	3	0
Arntzen Corp	Manufacturer*	IL	6	0
Arr-Maz Custom Chemicals	Manufacturer*	FL	4	0
Armaz Specialty Chemicals	Manufacturer*	TX	3	0
Arrochem Inc	Manufacturer*	NC	1	0
Arsenal Hill	Generator	LA	1	0
Asarco Incorporated	Manufacturer*	NC	1	0
Ascend Performance Materials	Manufacturer*	AL	41	0
Asheville	Generator	NC	4	0
Ashland Hercules Water Technol	Manufacturer*	WV	0	0
Ashland Inc Neal Wv	Manufacturer*	WV	2	0
Ashland Performance Materials	Manufacturer*	CA	4	0
Ashland Specialty Chemical Co	Manufacturer*	AR	1	0
Ashta Chemicals Inc	Manufacturer*	OH	0	0
Ashtabula	Generator	OH	1	0
Associated Aerospace Activities	Manufacturer*	CT	15	0
Associated Rubber Company	Manufacturer*	GA	15	0
Astoria	Generator	NY	7	0
Atchison Casting Corporation	Manufacturer*	MO	2	0
Ati Albany Operations Facility	Manufacturer*	OR	9	0
Ati Titanium Llc	Manufacturer*	WV	4	0
Atkemix Ten Inc	Manufacturer*	LA	15	0
Atlantic Resources Corp	Manufacturer*	NJ	0	0
Atlantic Wire Company Llc	Manufacturer*	FL	3	0
Atlas Refinery Inc	Manufacturer*	NJ	2	0
Atlas Roofing Corp	Manufacturer*	CO	1	0
Atlas Steel & Wire Gerdau Ameristeel Us Inc	Manufacturer*	LA	6	0
Atlas Tube Inc	Manufacturer*	IL	3	0
Atofina Chemicals Inc.	Manufacturer*	PA	2	0
Atofina Chemicals Incorporated	Manufacturer*	NY	0	0
Atotech Usa	Manufacturer*	SC	2	0
Atotech Usa Inc	Manufacturer*	MD	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Audubon Metals Llc	Manufacturer*	KY	13	0
Auriga Polymers Inc - Spartanburg Facility	Manufacturer*	SC	1	0
Aurolife Pharma Corp	Manufacturer*	NJ	0	0
Austin Dt	Generator	MN	4	0
Autoliv Noth America (Ogden)	Manufacturer*	UT	3	0
Automatic Equipment Manufacturing Company	Manufacturer*	NE	1	0
Automatic Welding & Manufacturing Co	Manufacturer*	OH	4	0
Avantor Performance Materials	Manufacturer*	NJ	2	0
Aventine Renewable Energy Inc	Manufacturer*	IL	6	0
Avery Dennison	Manufacturer*	IL	7	0
Avery Dennison Fasson Roll Division	Manufacturer*	PA	2	0
Avery Dennison Information & Brand Management Div	Manufacturer*	NY	2	0
Aveva Drug Delivery Systems Inc	Manufacturer*	IA	6	0
Avm Industries	Manufacturer*	SC	1	0
Avon Lake	Generator	OH	1	0
Avon Products Inc - Morton Grove	Manufacturer*	IL	2	0
Avondale Mills Graniteville Fabrics Inc Horse Cree	Manufacturer*	SC	3	0
Avondale Mills Inc Sibley Plant	Manufacturer*	GA	7	0
Avx Corp Myrtle Beach	Manufacturer*	TN	4	0
Awp - Mill #6	Manufacturer*	WV	1	0
Ayerst-Wyeth Pharmaceuticals Whitehall Laboratorie	Manufacturer*	PR	2	2
Azetca Milling L P	Manufacturer*	KY	13	0
B C Cobb	Generator	MI	2	0
B L England	Generator	NJ	8	0
B W Freeman	Manufacturer*	MO	7	0
Bac Products Inc	Manufacturer*	IA	14	0
Bacardi Bottling Corporation	Manufacturer*	IL	6	0
Bacardi Corp	Manufacturer*	TN	2	2
Badger State Ethanol Inc	Manufacturer*	WV	2	0
Bailey	Generator	AR	5	0
Bailey Pvs Oxides Decatur Llc	Manufacturer*	CA	41	0
Bailly	Generator	IN	3	0
Baker Petrolite	Manufacturer*	PA	2	0
Baker Petrolite Corp	Manufacturer*	OK	3	0
Baker Petrolite Corp - Broussard Facility	Manufacturer*	LA	2	0
Balchem Corp	Manufacturer*	NY	1	0
Baldwin	Generator	IL	7	0
Ballard Material Products	Manufacturer*	MA	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Baltimore Refuse Energy Systems Co Lp	Generator	MD	8	0
Bancroft Bag Inc	Manufacturer*	NC	2	0
Bardstown Mills Inc	Manufacturer*	LA	5	0
Barge Forest Products Co	Manufacturer*	MS	9	0
Barium & Chemicals Inc	Manufacturer*	OH	9	0
Barney M Davis	Generator	TX	9	0
Barr Laboratories Inc	Manufacturer*	NJ	2	0
Barrett	Generator	NY	8	0
Barry	Generator	AL	14	0
Bartlett Milling Company	Manufacturer*	NC	0	0
Barton Brands Ltd	Manufacturer*	MD	5	0
Basf Catalysts Llc	Manufacturer*	NJ	2	0
Basf Chemicals	Manufacturer*	KS	7	0
Basf Const Chem	Manufacturer*	PA	2	0
Basf Corp	Manufacturer*	TX	5	0
Basf Corp - Port Allen Wo Rks	Manufacturer*	LA	2	0
Basf Corp Coatings & Colorants Div.	Manufacturer*	NY	1	0
Basf Corp Edison Technology Center	Manufacturer*	OH	0	0
Basf Corp Portsmouth Plant	Manufacturer*	VA	3	0
Basf Corporation	Manufacturer	LA	2	0
Basf Dnt Plant	Manufacturer*	LA	4	0
Basf Fina Petrochemicals	Manufacturer*	TX	3	0
Basf Monaca Plt	Manufacturer*	PA	9	0
Basic Chemicals #J07	Manufacturer*	AL	3	0
Basofil Fibers Llc At The Enka Industrial Site	Manufacturer*	NC	4	0
Bausch & Lomb Inc	Manufacturer*	FL	3	0
Baxter Healthcare Corp	Manufacturer*	CA	5	0
Baxter Healthcare Corp @ Cherry Hill Ind Pk	Manufacturer*	NJ	2	0
Baxter Healthcare Corporation	Manufacturer*	MS	5	0
Baxter Wilson	Generator	MS	6	0
Bay Front	Generator	WI	1	0
Bay Shore	Generator	OH	4	0
Bay State Milling Co	Manufacturer*	IA	6	0
Bay State Paper Company	Manufacturer*	MI	2	0
Bayer Corp	Manufacturer	WV	8	0
Bayer Cropscience Institute Plant	Manufacturer*	AL	2	0
Bayer Healthcare Llc Diagnostics Div	Manufacturer*	IN	4	0
Bayer Materialsience	Manufacturer*	WV	8	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Bayer Materialscience Baytown	Manufacturer*	TX	3	0
Bayou Steel Corporation	Manufacturer	LA	4	0
Bayport Polyethylene Plant	Manufacturer*	TX	4	0
Bayway Refinery Company	Manufacturer	NJ	10	0
Bcp Ingredients	Manufacturer*	MO	3	0
Bean Lumber Co Inc	Manufacturer*	AR	7	0
Bear Island Llc Div	Manufacturer*	WA	2	0
Bear Island Paper Co., L.L.C.	Manufacturer	VA	2	0
Bear Metallurgical Co	Manufacturer*	PA	2	0
Beaulieu Fibers	Manufacturer*	AL	34	0
Beaver	Generator	OR	13	5
Beaver Livermore Falls	Generator	ME	1	0
Beaver Valley	Generator	PA	9	0
Beck Aluminum Alloys Ltd	Manufacturer*	PA	1	0
Becromal Of America	Manufacturer*	TN	27	0
Bedford Materials Co Inc	Manufacturer*	PA	0	0
Begley Lumber Co Inc	Manufacturer*	KY	3	0
Behr Aluminum Inc.	Manufacturer*	IL	6	0
Behr Iron & Metal	Manufacturer*	IL	3	0
Beiersdorf Skin Care Products	Manufacturer*	DE	2	0
Bekaert Corp	Manufacturer*	CO	3	0
Belac Llc	Manufacturer*	FL	5	0
Belews Creek	Generator	NC	2	0
Belle River	Generator	MI	4	0
Belle, West Virginia Plant	Manufacturer	WV	8	0
Bemis Co Inc	Manufacturer*	NJ	0	0
Bemis Company	Manufacturer*	AR	3	0
Bemis Company Inc	Manufacturer*	WA	13	5
Ben Venue Laboratories Inc	Manufacturer*	PA	0	0
Bennett Lumber Company	Manufacturer*	AL	25	0
Benning	Generator	DC	2	0
Bercen Inc Southern Div	Manufacturer*	LA	4	0
Bermco Aluminum	Manufacturer*	AL	23	0
Bethlehem Apparatus Bethlehem Plt	Manufacturer*	PA	2	0
Bethlehem Steel Corp. - Burns Harbor Division	Manufacturer	IN	2	0
Bf Goodrich	Manufacturer	OH	6	0
Bf Goodrich Kalama, Inc.	Manufacturer	WA	12	5
Bibb Company Camellia Plant	Manufacturer*	GA	5	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Bibler Brothers Lumber Co	Manufacturer*	AR	3	0
Bic Corporation	Manufacturer*	SC	2	0
Bid-Well Corporation	Manufacturer*	TN	4	0
Big Bend	Generator	FL	10	0
Big Brown	Generator	TX	3	0
Big Cajun 2	Generator	LA	2	0
Big River Resources Dyersville Llc	Manufacturer*	IA	1	0
Big River Resources West Burlington Llc	Manufacturer*	IA	8	0
Big River Zinc	Manufacturer*	KY	3	0
Big Sandy	Generator	KY	1	0
Big Stone	Generator	SD	1	0
Bio Lab Incorporated	Manufacturer*	KS	5	0
Biovantage Fuels Llc	Manufacturer*	IL	3	0
Blachford Corp	Manufacturer*	IL	4	0
Black Dog	Generator	MN	5	0
Black River Power Llc Electric Generation Facility (Fort Drum Cogeneration Fac)	Generator	NY	1	0
Blandin Paper Company	Manufacturer	MN	0	0
Blissfield Manufacturing Co	Manufacturer*	MI	3	0
Blount Street	Generator	WI	2	0
Blue Heron Paper Co	Manufacturer*	OR	9	2
Blue Island Refinery	Manufacturer	IL	2	0
Blue Ridge Metals Corp	Manufacturer*	NJ	4	0
Blue Ridge Paper Products Inc (Dba Evergreen Packa	Manufacturer*	NC	9	0
Blue Triangle Hardwoods	Manufacturer*	PA	0	0
Bluegrass Biodiesel Llc	Manufacturer*	KY	20	0
Bluegrass Container Co Llc	Manufacturer*	LA	1	0
Bluegrass Kesco	Manufacturer*	KY	10	0
Boc Gases	Manufacturer*	IN	7	0
Boehringer Ingelheim Pharmaceuticals	Manufacturer*	CT	3	0
Boehringer Ingelheim Vetmedica Inc	Manufacturer*	MO	3	0
Boehringer Ingelheim Vetmedica Inc - 5th St Nw	Manufacturer*	IL	4	0
Boehringer Ingelheim Vetmedica Inc Riverside	Manufacturer*	IA	4	0
Boise Cascade Corp	Manufacturer	AL	15	2
Boise Cascade Corp	Manufacturer	AL	12	2
Boise Cascade Corp Lagrande Sawmill	Manufacturer*	OR	6	0
Boise Cascade Corp.	Manufacturer	WA	8	1
Boise Cascade/International Falls	Manufacturer	MN	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Boise Packaging & Newsprint Llc	Manufacturer*	MI	1	0
Boise White Paper Llc	Manufacturer*	WI	8	0
Boise White Paper Mill	Manufacturer*	AL	18	0
Boomer Lake Station	Generator	OK	2	0
Borbet Alabama Inc	Manufacturer*	AL	20	0
Borden Chemical Incorporated	Manufacturer*	NC	1	0
Borealis Compounds Inc	Manufacturer*	NJ	2	0
Borger Refinery	Manufacturer*	UT	4	0
Boron Products Llc	Manufacturer*	OK	3	0
Boulder Scientific Co Mead Facility	Manufacturer*	CO	2	0
Bowater Forest Products Div - Albertville Sawmill	Manufacturer*	AL	21	0
Bowater Newsprint And Directory Division	Manufacturer	TN	12	0
Bowater Newsprint South Inc.	Manufacturer*	OR	2	0
Bowen	Generator	GA	16	0
Bowline	Generator	NY	7	0
Boyd Service Inc	Manufacturer*	KY	2	0
Bp Amoco Chemical Co - Cooper River Plant	Manufacturer*	SC	3	0
Bp Amoco Chemicals	Manufacturer*	AL	41	0
Bp Amoco Whiting Refinery	Manufacturer*	IN	3	0
Bp Chemical Plant Texas City	Manufacturer*	TX	4	0
Bp Cherry Point Refinery	Manufacturer*	WA	11	0
Bp Exploration & Oil, Inc. Toledo Refinery	Manufacturer	OH	2	0
Bp Products Toledo Refinery	Manufacturer*	OH	3	0
Bp West Coast Products Llc Carson Bp Carson Refine	Manufacturer*	CA	11	0
Braddock Plt	Manufacturer*	PA	4	0
Bradford Printing And Finishing	Manufacturer*	RI	3	0
Bradford Soap Works	Manufacturer*	RI	4	0
Bradley Lumber Company	Manufacturer*	CA	5	0
Braeburn Alloy Steel Rolling Mill Fac	Manufacturer*	PA	3	0
Braidwood	Generator	IL	7	0
Branford Wire Manufacturing	Manufacturer*	NJ	4	0
Braskem America Inc Laporte Site	Manufacturer*	TX	3	0
Braskem America Neal Plant	Manufacturer*	AL	2	0
Braun Corp	Manufacturer*	KY	14	0
Braxton S Sawmill	Manufacturer*	NC	1	0
Brayton Point	Generator	MA	9	0
Brazonics	Manufacturer*	NJ	4	0
Breaux Brothers Enterprises Inc Daspit Rd Fac	Manufacturer*	LA	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Bremo Bluff	Generator	VA	2	0
Brewer Science Inc	Manufacturer*	MO	7	0
Bridgeport Harbor	Generator	CT	8	0
Bristol Myers Squibb Inc	Manufacturer*	NJ	0	0
Bristol-Myers Squibb Co	Manufacturer*	NJ	0	0
Bristol-Myers Squibb Research & Development	Manufacturer*	CT	3	0
Britton Lumber Co	Manufacturer*	WA	2	0
Brooklyn Navy Yard Cogeneration Partners L P	Generator	NY	7	0
Brooks Instrument Div	Manufacturer*	SC	2	0
Browns Ferry	Generator	AL	41	0
Brownville Specialty Paper Products Inc	Manufacturer*	NY	1	0
Bruce Hardwood Flooring By Armstrong	Manufacturer*	WV	0	0
Bruce Hardwood Floors	Manufacturer*	MO	8	0
Bruce Mansfield	Generator	PA	9	0
Brunner Island	Generator	PA	3	0
Brunswick	Generator	NC	9	0
Brunswick Cellulose Inc	Manufacturer*	IA	13	0
Btb Refining Llc	Manufacturer*	TX	6	0
Buchanan Lumber Mobile Inc	Manufacturer*	AL	14	0
Buck	Generator	NC	1	0
Buck Knives Inc	Manufacturer*	MA	3	0
Buckeye Florida Lp	Manufacturer*	FL	3	0
Buckeye Lumberton Inc	Manufacturer*	NC	0	0
Buckeye Technologies Inc Memphis Plant	Manufacturer*	TN	5	0
Buckman Laboratories Inc	Manufacturer*	TN	5	0
Buckman Laboratories Incorporated	Manufacturer*	MO	5	0
Buckmans Inc	Manufacturer*	SC	2	0
Buick Resource Recycling Facility Llc	Manufacturer*	MT	8	0
Bull Moose Tube Co	Manufacturer*	IL	2	0
Bull Moose Tube Company	Manufacturer*	MS	7	0
Bull Run	Generator	TN	27	0
Bunge Milling	Manufacturer*	KY	11	0
Bunge Milling Inc	Manufacturer*	IL	7	0
Bunn-O-Matic Corp	Manufacturer*	IL	5	0
Burke-Parsons-Bowlby Corp	Manufacturer*	KY	3	0
Burlington	Generator	IA	8	0
Burrows Paper Corp	Manufacturer*	NY	1	0
Burrows Paper Corp Mohawk Valley Facility	Manufacturer*	NY	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Burrows Paper Corporation	Manufacturer*	NC	3	0
Byron	Generator	IL	6	0
C D McIntosh Jr	Generator	FL	3	0
C F Industries Inc	Manufacturer*	FL	4	0
C L Dickert Lumber Co_Inc	Manufacturer*	AL	18	0
C P Crane	Generator	MD	8	0
C R Huntley	Generator	NY	3	0
C&H Sugar Co Inc	Manufacturer*	FL	12	2
Cabot Corp Fmo Div	Manufacturer*	IL	10	0
Cabot Supermetals	Manufacturer*	RI	2	0
Cabot-Holyoke	Generator	MA	2	0
Calabrian Corp	Manufacturer*	TX	3	0
Calcasieu Refining Co	Manufacturer*	LA	3	0
Calgon Carbon Corp	Manufacturer*	KY	2	0
Calgon Carbon Corp Neville Island Plant	Manufacturer*	PA	9	0
Calgon Carbon Corporation	Manufacturer*	MS	5	0
Calgon Corp	Manufacturer*	NJ	2	0
California Redwood	Manufacturer*	FL	12	2
California Steel Industries Inc	Manufacturer*	CA	12	0
California Sulphur Co	Manufacturer*	CA	11	0
Callaway	Generator	MO	5	0
Calumet Lubricants & Waxes Llc	Manufacturer*	LA	1	0
Calumet Lubricants Co Lp	Manufacturer*	LA	3	0
Calumet Lubricants Co Lp Calumet Cotton Valley	Manufacturer*	LA	2	0
Calvert Cliffs	Generator	MD	7	0
Cambrex Charles City Inc	Manufacturer*	IL	5	0
Cambridge-Lee Industries	Manufacturer*	TN	2	0
Camco Chemicals	Manufacturer*	KY	20	0
Canaday	Generator	NE	5	1
Canadys Steam	Generator	SC	2	0
Canal	Generator	MA	9	0
Cane Run	Generator	KY	11	0
Cape Fear	Generator	NC	1	0
Capital Resin Corp	Manufacturer*	OH	10	0
Caraustar Mill Group Inc Auste Ll Boxboard Mills	Manufacturer*	GA	8	0
Carbide Industries Llc	Manufacturer*	KY	15	0
Cardinal	Generator	OH	2	0
Cardinal Companies L P	Manufacturer*	SC	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Cardolite Corp	Manufacturer*	NJ	6	0
Cargill Corn Milling Na	Manufacturer*	NE	5	0
Cargill Corn Plant	Manufacturer*	TN	4	0
Cargill Dry Corn Ingredients	Manufacturer*	IL	17	0
Cargill Inc	Manufacturer*	AR	41	0
Cargill Inc Salt Div	Manufacturer*	KS	4	0
Cargill Inc - Corn Milling Division	Manufacturer	IA	7	0
Cargill Inc Salt Div	Manufacturer*	OH	6	0
Cargill Inc Wet Corn Milling - Wahpeton	Manufacturer*	NE	1	0
Cargill Inc-Cedar Rapids	Manufacturer*	IA	4	0
Cargill Refinery	Manufacturer*	NC	1	0
Cargill Salt	Manufacturer*	UT	3	0
Cargill Texturizing Solutions	Manufacturer*	IN	3	0
Caribbean Petroleum Refining Lp	Manufacturer*	TN	2	2
Carlisle Finishing Cone Mills	Manufacturer*	SC	1	0
Carolina Miscellaneous Metals Llc	Manufacturer*	SC	1	0
Carolina Pole Inc	Manufacturer*	SC	4	0
Carotell Paper Board Corp	Manufacturer*	TN	1	0
Carpenter Co	Manufacturer*	PA	2	0
Carpenter Powder Products Inc	Manufacturer*	PA	9	0
Carpenter Technology Corp	Manufacturer*	NJ	6	0
Carus Corp Lasalle Site	Manufacturer*	IL	6	0
Cascade Corp	Manufacturer*	OH	4	0
Cascade Pacific Pulp Halsey Pulp Mill	Manufacturer*	SC	9	0
Cascades Tissue Group Ny Inc	Manufacturer*	OH	1	0
Cascades Tissue Group Pa Inc Ransom Mill	Manufacturer*	PA	0	0
Cascades Tissue Group Wisconsin Inc	Manufacturer*	AL	3	0
Cast Aluminum Solutions Llc	Manufacturer*	IN	3	0
Catalent Pharma Solutions	Manufacturer*	FL	5	0
Catalyst Recovery Of Louisiana Llc	Manufacturer*	LA	2	0
Catalytic Products International Inc	Manufacturer*	IL	4	0
Catawba	Generator	SC	2	0
Catawissa Lumber & Specialty	Manufacturer*	PA	0	0
Catlettsburg Refining Llc	Manufacturer*	LA	2	0
Catlettsburg Refining, Llc	Manufacturer	KY	2	0
Cavalier Chemical Co Inc	Manufacturer*	NJ	6	0
Cayuga	Generator	IN	17	0
Cc Metals & Alloys	Manufacturer*	MI	9	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Cci Manufacturing Il Corp	Manufacturer*	IL	4	0
Ccp Composites Us	Manufacturer*	FL	4	0
Cdc Mead Llc	Manufacturer*	WA	6	0
Cedar Bayou	Generator	TX	3	0
Celanese Acetate Llc Celriver Plant	Manufacturer*	TN	2	0
Celanese Acetate Llc-Celriver Plant	Manufacturer	SC	2	0
Celanese Acetate, Llc (Celco Plant)	Manufacturer	VA	1	0
Celanese Emulsions Enoree Plant	Manufacturer*	SC	1	0
Celanese Engineered Resins Inc.	Manufacturer*	TX	4	0
Celanese Ltd - Meredosia Facility	Manufacturer*	IL	5	0
Celanese Ltd Bay City Plant	Manufacturer*	TX	4	0
Cello Professional Products	Manufacturer*	MN	3	0
Cellu Tissue - Cityforest Llc	Manufacturer*	WI	2	0
Cellu Tissue Neenah	Manufacturer*	WI	0	0
Centennial Mills Div Adm Milling	Manufacturer*	WA	5	0
Central Carbide Llc	Manufacturer*	OK	3	0
Central Kentucky Processing Incorporated Heat Trea	Manufacturer*	MI	11	0
Central Ky Hardwoods	Manufacturer*	LA	17	0
Central Products Co	Manufacturer*	IL	4	0
Centralia	Generator	WA	13	0
Centre Foundry & Machine Co	Manufacturer*	ID	2	0
Century Aluminum Of West Virginia Inc	Manufacturer*	AL	11	0
Cereal Food Processors Incorporated	Manufacturer*	WA	3	0
Cerestar U S A Inc - Hammond Plant	Manufacturer	IN	2	0
Certainfeed Corp	Manufacturer*	LA	3	0
Cf Industries Inc	Manufacturer*	LA	3	0
Cf Industries Inc (Plant City Phosphate Complex)	Manufacturer*	ID	3	0
Cf Industries, Inc.	Manufacturer	LA	2	0
Cf&I Steel, L.P. DbA Rocky Mountain Steel Mills	Manufacturer	CO	2	0
Cgi Industries Inc Compressed Gas Div	Manufacturer*	NJ	2	0
Ch Resources Inc Beaver Falls	Generator	NY	1	0
Chalk Point	Generator	MD	7	0
Chalmette Refining, L.L.C.	Manufacturer	LA	4	0
Chamberlin & Barclay Inc	Manufacturer*	SC	0	0
Chamois	Generator	MO	5	0
Champion Int'l Corp.	Manufacturer	NC	3	0
Champion International Corp.	Manufacturer	ME	7	0
Champion International Courtland Mill	Manufacturer	AL	41	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Champion Technologies Inc	Manufacturer*	TX	4	0
Champion Technology Inc	Manufacturer*	LA	4	0
Channel Chemical Corp	Manufacturer*	MS	10	0
Chaparral Steel	Manufacturer*	WA	2	0
Charles Ingram Lumber Co	Manufacturer*	SC	3	0
Charles R Lowman	Generator	AL	18	0
Charleston Packaging Company Incorporated	Manufacturer*	UT	4	0
Charter Steel	Manufacturer*	WV	0	0
Chase Brass & Copper Co Llc	Manufacturer*	OH	5	0
Chase Products Co	Manufacturer*	IL	4	0
Chattem Chemicals Inc	Manufacturer*	TN	27	0
Chem Fleur Inc	Manufacturer*	NJ	6	0
Chem Trend Incorporated	Manufacturer*	MI	1	0
Chem Waste Mgmt	Manufacturer*	CA	11	1
Chem-Trend Lp	Manufacturer*	MI	1	0
Chemical & Metal Industries Inc	Manufacturer*	DE	1	0
Chemical Dynamics Inc	Manufacturer*	GA	4	0
Chemical Products Technologies	Manufacturer*	GA	16	0
Chemical Specialties Inc	Manufacturer*	TX	5	0
Chemical Specialties Incorporated	Manufacturer*	NC	1	0
Chemiplastica Thermoset Plastics Plant	Manufacturer*	MA	3	0
Chemol Co Inc	Manufacturer*	NC	1	0
Chemsico	Manufacturer*	MO	3	0
Chemsyn Science Laboratories Division Of Eagle Pic	Manufacturer*	MO	3	0
Chemtall Inc	Manufacturer*	GA	14	0
Chemtrade Logistics Inc Cairo Sulfur Prods	Manufacturer*	OH	4	0
Chemtrade Performance Chemicals Llc	Manufacturer*	WA	12	5
Chemtrade Refinery Services	Manufacturer*	TX	3	0
Chemtrade Refinery Services Inc	Manufacturer*	LA	1	0
Chemtura Corp	Manufacturer*	AL	14	0
Chemtura Corp - North Plant	Manufacturer*	WV	0	0
Chemtura Corp - South Plant	Manufacturer*	WV	0	0
Chemtura Corp D/B/A Hatco Corp	Manufacturer*	NJ	0	0
Chemtura Usa	Manufacturer*	FL	3	0
Cherokee	Generator	CO	1	0
Cherokee Nitrogen	Manufacturer*	AL	46	0
Cherokee Pharmaceuticals Llc	Manufacturer*	PA	0	0
Chesapeake	Generator	VA	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Chesterfield	Generator	VA	6	0
Chesterfield Lumber Company	Manufacturer*	SC	3	0
Cheswick	Generator	PA	3	0
Chevron Chemical Company	Manufacturer*	IA	8	0
Chevron Chemical Company Llc St. James Plant	Manufacturer	LA	3	0
Chevron Chemical Company, Llc Oak Point Plant	Manufacturer	LA	4	0
Chevron Oronite Co Llc	Manufacturer*	LA	3	0
Chevron Phillips Chemical Co	Manufacturer*	TX	3	0
Chevron Phillips Chemical Co - Pasadena Plastics C	Manufacturer*	TX	3	0
Chevron Phillips Chemical Co Lp	Manufacturer*	TX	3	0
Chevron Phillips Chemical Co Lp - Orange	Manufacturer*	TX	3	0
Chevron Phillips Chemical Co Lp Clemens Terminal	Manufacturer*	TX	4	0
Chevron Phillips Chemical Co Lp Sweeny Complex	Manufacturer*	TX	4	0
Chevron Phillips Chemical Company Lp	Manufacturer*	TX	4	0
Chevron Prods.Co. Richmond Refy	Manufacturer*	CA	12	0
Chevron Products Co	Manufacturer*	NJ	6	0
Chevron Products Co - Hawaii Refinery	Manufacturer*	IA	1	0
Chevron Products Co Pascagoula Refinery	Manufacturer*	MS	10	0
Chevron Usa Products Company	Manufacturer*	UT	3	0
Chicago Heights Steel	Manufacturer*	IL	2	0
Chief Custom Products	Manufacturer*	NE	3	0
Chief Industries - Fabrication Div	Manufacturer*	NE	3	0
Chief Transportation Products Inc	Manufacturer*	NE	5	0
Chinook Ventures Inc	Manufacturer*	WA	12	5
Chips Incorporated	Manufacturer*	VA	3	0
Cholla	Generator	AZ	4	0
Chromalloy Castings	Manufacturer*	FL	5	0
Chs Inc Laurel Refinery	Manufacturer*	MT	1	0
Church & Dwight (Formerly Hettich)	Manufacturer*	MO	3	0
Church & Dwight Co Inc	Manufacturer*	NJ	8	0
Church & Dwight Company Incorporated	Manufacturer*	AL	7	0
Church & Dwight Detergents Inc	Manufacturer*	NJ	0	0
Church And Dwight Co Inc	Manufacturer*	PR	3	0
Ciba Specialty Chemicals Corporation	Manufacturer*	NC	1	0
Citgo Petroleum Corp	Manufacturer*	LA	3	0
Citgo Petroleum Corp Lemont Refinery	Manufacturer*	IL	4	0
Citgo Petroleum Corporation Lake Charles Manufacturing Complex Refinery	Manufacturer	LA	8	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Citgo Refining & Chemicals Co Lp East Plant	Manufacturer*	TX	6	0
Citrus & Allied Essences Ltd	Manufacturer*	MD	3	0
Clad Metals Llc / All-Clad Met Alcrafters Llc	Manufacturer*	PA	9	0
Claire Sprayway Inc	Manufacturer*	IL	4	0
Clairton Works C/O Usx Corp	Manufacturer	PA	4	0
Clariant Corporation Martin Plant	Manufacturer*	SC	3	0
Clariant Lsm Incorporated	Manufacturer*	SC	2	0
Clarke County Pole And Piling Co Inc	Manufacturer*	AL	20	0
Claude Vandyke	Generator	MI	1	0
Clay & Bailey Manufacturing Co	Manufacturer*	NY	4	0
Clay Boswell	Generator	MN	0	0
Claymont Steel	Manufacturer*	FL	2	0
Clear Lake Lumber	Manufacturer*	PA	4	0
Clearwater Forest Industries	Manufacturer*	ID	3	2
Clearwater Inc	Manufacturer*	PA	9	0
Clearwater Paper	Manufacturer*	FL	5	0
Clearwater Paper Corp	Manufacturer*	ID	3	2
Clearwater Paper Natural Dam	Manufacturer*	NY	1	0
Cleary Flood	Generator	MA	4	0
Clendenin Lumber Co	Manufacturer*	SC	2	0
Clifford B Hannay & Son Inc	Manufacturer*	NY	1	0
Cliffs District Lab	Manufacturer*	MN	1	0
Cliffside	Generator	NC	0	0
Clifty Creek	Generator	IN	15	0
Climax Manufacturing Co	Manufacturer*	NY	1	0
Climax Molybdenum Co	Manufacturer*	ID	6	0
Climax Molybdenum Co Henderson Mill	Manufacturer*	IA	3	0
Clinch River	Generator	VA	32	4
Clinton	Generator	IL	5	0
Clinton Laboratories	Manufacturer*	IN	17	0
Clorox Products Manufacturing Co	Manufacturer*	FL	5	0
Clover	Generator	VA	2	0
Club Kit Inc	Manufacturer*	GA	7	0
Cmc Construction Services - Concrete Accessories	Manufacturer*	LA	4	0
Cmc Steel Fabricators Inc DbA Cmc Steel Arkansas	Manufacturer*	AR	2	0
Cmi Industries	Manufacturer*	NC	1	0
Cna Holdings- Celanese Ticona Shelby Plant	Manufacturer*	NC	0	0
Cnc International	Manufacturer*	RI	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Coastal Chemical Co Llc	Manufacturer*	LA	2	0
Coastal Eagle Point Oil Company	Manufacturer	NJ	2	0
Coastal Lumber Co - Buckh Annon	Manufacturer*	WV	0	0
Coastal Lumber Co - Smithburg	Manufacturer*	WV	8	0
Coastal Lumber Co - Stevenson	Manufacturer*	AL	34	0
Coastal Lumber Co Weldon Sawmill	Manufacturer*	NC	3	0
Coastal Saint Helens Chemical	Manufacturer*	PA	12	0
Coated Sand Solutions Llc	Manufacturer*	IN	6	0
Coatex & Polacryl	Manufacturer*	SC	2	0
Coffeen	Generator	IL	2	0
Coffeyville Resources Refining & Marketing	Manufacturer*	KS	2	0
Coim Usa Inc	Manufacturer*	NJ	2	0
Colbert	Generator	AL	46	0
Coletto Creek	Generator	TX	3	0
Colgate Palmolive Co	Manufacturer*	NJ	0	0
Colgate Palmolive Co Inc	Manufacturer*	NJ	2	0
Colgate Palmolive Softsoap	Manufacturer*	MO	5	0
Collins Sawmill	Manufacturer*	MO	3	0
Collums Lumber Mill Incorporated	Manufacturer*	SC	3	0
Colonial Metals Co	Manufacturer*	PA	3	0
Colonial Metals Incorporated	Manufacturer*	MD	4	0
Colonial Sugar Refinery Savannah Foods & Industries Inc. A Subsidiary Of Imperial Sugar Company	Manufacturer	LA	4	0
Colorado Container Corp	Manufacturer*	CT	1	0
Colorado Petroleum	Manufacturer*	CO	1	0
Colorado Sweet Gold Llc	Manufacturer*	IA	2	0
Colorco Inc	Manufacturer*	NJ	6	0
Colorite Plastics Co	Manufacturer*	NJ	2	0
Colorworks Inc	Manufacturer*	VA	4	0
Colson Caster Corp	Manufacturer*	AR	6	0
Columbia	Generator	WI	6	0
Columbia Falls Aluminum Co Llc	Manufacturer*	NC	2	1
Columbia Generating	Generator	WA	9	3
Columbus Cellulose Fibers	Manufacturer*	MS	14	0
Columbus Pulp & Paper Complex	Manufacturer	MS	14	0
Comanche Peak	Generator	TX	3	0
Combe Labs Inc	Manufacturer*	IL	5	0
Commscope Inc Statesville Facility	Manufacturer *	NJ	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Complex Chemicals Co Inc	Manufacturer*	LA	5	0
Composite Materials L L C	Manufacturer*	SC	1	0
Conagra Flour Milling Co	Manufacturer*	UT	2	0
Conagra Food Ingredients Company	Manufacturer*	FL	5	0
Conagra Foods	Manufacturer*	IL	5	0
Conagra Foods Inc	Manufacturer*	IL	4	0
Conagra Foods Ingredients	Manufacturer*	PA	0	0
Conbraco Industries Inc	Manufacturer*	SC	3	0
Conco Inc	Manufacturer*	KY	10	0
Conemaugh	Generator	PA	1	0
Conesville	Generator	OH	12	0
Conex Cable Llc	Manufacturer*	IN	3	0
Confederated Specialty Assoc Inc	Manufacturer*	FL	6	0
Connectivity Solutions Mfg Incorporated	Manufacturer*	NE	5	0
Conners Creek	Generator	MI	4	0
Conoco Phillips Lake Charles Refinery	Manufacturer*	LA	3	0
Conocophillip San Francisco Area Refinery At Rodeo	Manufacturer*	CA	12	0
Conocophillips Billings Refinery	Manufacturer*	ND	1	0
Conocophillips Co - Alliance Refinery	Manufacturer*	LA	3	0
Conocophillips Co - Bayway Refinery	Manufacturer*	NM	6	0
Conocophillips Ferndale Refinery	Manufacturer*	WA	11	0
Conocophillips Los Angeles Refinery Wilmington Pla	Manufacturer*	CA	11	0
Conocophillips Santa Maria Facility Carbon Plant	Manufacturer*	CA	10	0
Conocophillips Trainer Ref	Manufacturer*	PA	2	0
Conocophillips/Ponca City Rfnry	Manufacturer*	PA	3	0
Conopco, Inc D/B/A Unilever Home & Personal Care Usa	Manufacturer	IN	2	0
Consolidated Papers Inc./Biron Wisconsin Rapids Div	Manufacturer	WI	2	0
Consolidated Pharmaceutical Group Inc	Manufacturer*	ME	3	0
Consolidated Recycling Co Inc	Manufacturer*	KS	13	0
Constellium Rolled Products Ravenswood Llc	Manufacturer*	WV	11	0
Contech Construction Products Inc	Manufacturer*	KY	4	0
Continental Casting Llc	Manufacturer*	MO	8	0
Continental Grain Wayne Farms Decatur Div	Manufacturer*	AL	41	0
Continental Motors Inc	Manufacturer*	AR	16	0
Contra Costa	Generator	CA	9	2
Contract Pharmaceuticals Ltd Niagara	Manufacturer*	NY	3	0
Coop Service Center	Manufacturer*	MO	5	0
Cooper	Generator	KY	24	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Cooper	Generator	KY	4	0
Cooper Tools Llc Sumter Sc Operation	Manufacturer*	VA	3	0
Coopers Creek Chem Upper Merion Plt	Manufacturer*	SC	2	0
Cope	Generator	SC	1	0
Copperhead Chemical Co Inc	Manufacturer*	PA	2	0
Coral Chemical Co	Manufacturer*	IL	2	0
Corette	Generator	MT	1	0
Corn Products	Manufacturer*	ND	0	0
Corn Products Internati onal, Inc Argo Plant	Manufacturer	IL	4	0
Corning Mine	Manufacturer*	MI	11	0
Corry Contract Inc	Manufacturer*	PA	3	0
Cos-Mar Styrene Monomer Plant	Manufacturer*	LA	5	0
Cosan Chemical Corp	Manufacturer*	NJ	2	0
Council Bluffs	Generator	IA	5	0
Council Energy Company	Manufacturer*	SC	2	0
Countrymark Refining & Logistics Llc	Manufacturer*	KS	13	0
Coveright Surfaces Usa Co	Manufacturer*	TN	1	0
Coyote	Generator	ND	5	0
Cp Chemicals Group Lp	Manufacturer*	OH	0	0
Cpc International	Manufacturer*	NJ	2	0
Craig	Generator	CO	3	1
Crane & Co Inc	Manufacturer*	MD	3	0
Crane Byron Weston Mill	Manufacturer*	MD	3	0
Crane Pioneer Mill	Manufacturer*	MA	3	0
Cranston Print Works	Manufacturer*	SC	4	0
Cranston Print Works Co	Manufacturer*	NC	0	0
Crawford	Generator	IL	2	0
Cray Valley Usa Llc	Manufacturer*	AL	18	0
Crayola Llc Church Ln Plt	Manufacturer*	PA	2	0
Crc Industries Inc	Manufacturer*	PA	2	0
Crescent Marketing (Dbp Crescent Manufacturing)	Manufacturer*	NY	1	0
Crist	Generator	FL	14	1
Criterion Catalysts & Technologies Lp - Hpa Port A	Manufacturer*	LA	1	0
Crocker Technical Papers	Manufacturer*	MA	0	0
Croda Inc	Manufacturer*	RI	0	0
Crosby Lumber Co Inc	Manufacturer*	AL	14	0
Cross	Generator	SC	3	0
Crossett Paper Operations	Manufacturer	AR	5	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Crossfield Products Corp	Manufacturer*	NJ	6	0
Crown Vantage Paper Company-Port Huron Mill	Manufacturer	MI	1	0
Crucible Industries Llc	Manufacturer*	NY	1	0
Crystal Inc-Pmc	Manufacturer*	PA	2	0
Crystal Refining Company	Manufacturer*	MI	2	0
Crystal River	Generator	FL	11	0
Csa Limited Inc	Manufacturer*	TX	3	0
Ct Specialties Corp	Manufacturer*	NC	8	0
Cumberland	Generator	TN	19	0
Cumberland Products Inc	Manufacturer*	KY	17	0
Curry Timber Products Inc	Manufacturer*	KY	7	0
Curtin Mill	Manufacturer*	WV	5	0
Custom Aluminum Products Inc	Manufacturer*	IL	3	0
Custom Resins Inc	Manufacturer*	KY	13	0
Cutco Cutlery Corp	Manufacturer*	NY	3	0
Cutler	Generator	FL	10	0
Cvc Specialty Chemicals Inc	Manufacturer*	NJ	2	0
Cvs Inc Pharmaceutical Formulations	Manufacturer*	NJ	0	0
Cymer Llc	Manufacturer*	TN	27	0
Cypress Chemical Co	Manufacturer*	AZ	4	0
Cypress Polypropylene Plant Union Carbide Corp.	Manufacturer*	LA	6	0
Cyro Industries	Manufacturer*	AR	6	0
Cytec Carbon Fibers Llc	Manufacturer*	SC	2	0
Cytec Engineered Materials Inc	Manufacturer*	MO	6	0
Cytec Industries	Manufacturer*	DE	3	0
Cytec Industries Inc	Manufacturer*	WV	8	0
Cytec Industries Inc Fortier Plant	Manufacturer*	MA	3	0
Cytec Olean Inc	Manufacturer*	NY	3	0
D B Wilson	Generator	KY	6	0
Daaquam Maine Costigan Stud Mill	Manufacturer*	MO	2	0
Daiki Corp	Manufacturer*	IA	15	0
Daikin America Inc	Manufacturer*	AR	41	0
Dak Americas Llc Cape Fear Site	Manufacturer*	NC	8	0
Dak Americas Llc Cooper River Plant	Manufacturer*	SC	3	0
Dale	Generator	KY	11	0
Dallman	Generator	IL	5	0
Damascus-Bishop Tube Co	Manufacturer*	PA	4	0
Dan E Karn	Generator	MI	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Dan River	Generator	NC	2	0
Dan River Inc. - Brookneal Plant	Manufacturer*	VA	2	0
Danisco Sweeteners Inc	Manufacturer*	IL	7	0
Dansby	Generator	TX	3	0
Danskammer	Generator	NY	6	0
Darby Metalworks	Manufacturer*	SD	2	0
Dart Container Corp Of Pennsylvania	Manufacturer*	PA	3	0
Dart Polymers Inc	Manufacturer*	KY	13	0
Dave Johnston	Generator	WY	2	0
Davis Wire Corp	Manufacturer*	AR	12	1
Davis-Besse	Generator	OH	4	0
Dayton Ogden Corporation	Manufacturer*	WA	3	0
Decker Creek	Generator	TX	3	0
Decordova	Generator	TX	3	0
Deepwater	Generator	NJ	8	0
Deer Park Lumber Mfg	Manufacturer*	PA	0	0
Degs Of Narrows Llc	Manufacturer*	WV	1	0
Degussa Corporation	Manufacturer*	NC	1	0
Del Laboratories Incorporated	Manufacturer*	NC	2	0
Delafoil Inc	Manufacturer*	OH	3	0
Delaware City Refinery	Manufacturer*	FL	2	0
Deleet Merchandising	Manufacturer*	NJ	2	0
Delek Tyler Refinery	Manufacturer*	TX	3	0
Delta	Generator	MS	5	0
Delta Mills Inc Delta 3	Manufacturer*	SC	3	0
Delta Natural Kraft	Manufacturer*	AR	2	0
Delta Tube & Fabricating Corporation	Manufacturer*	MI	1	0
Deltech Corp	Manufacturer*	LA	3	0
Deltech Resin Co	Manufacturer*	NJ	6	0
Deltic Timber Corp Ola Facility	Manufacturer*	AR	1	0
Depleted Uranium Hexafluoride Conversion	Manufacturer*	OH	13	0
Desoto Inc - Chemical Products Div	Manufacturer*	IL	4	0
Detrex	Manufacturer*	OH	0	0
Detroit Steel Co	Manufacturer*	MI	4	0
Dexter Corp./Nonwoven Div.	Manufacturer	CT	5	0
Diablo Canyon	Generator	CA	14	0
Diamond Chemical Co Inc	Manufacturer*	NJ	2	0
Diamond Communication Products Inc	Manufacturer*	NJ	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Diamond Crystal Brands	Manufacturer*	LA	11	0
Diamond Power Specialty Co	Manufacturer*	OH	2	0
Diamond Shamrock Mckee Plant	Manufacturer*	TX	5	0
Diaz Intermediates Corp	Manufacturer*	AR	7	0
Dickerson	Generator	MD	2	0
Dickert Lumber Co	Manufacturer*	SC	1	0
Diemolding Corp	Manufacturer*	NY	1	0
Dikeman Laminating Inc	Manufacturer*	NJ	2	0
Diversified Cpc International	Manufacturer*	IL	4	0
Dixie Chemical Bayport Facility	Manufacturer*	TX	4	0
Dober Chemical Corp	Manufacturer*	IN	2	0
Dodge Co	Manufacturer*	MA	2	0
Doe Run Co Glover Smelter	Manufacturer*	MO	4	0
Doe Run Co Herculanum Smelter	Manufacturer*	MO	3	0
Dohrn Transfer	Manufacturer*	IL	8	0
Dolco Packaging	Manufacturer*	NJ	0	0
Dolet Hills	Generator	LA	3	0
Dolphus M Grainger	Generator	SC	4	0
Domtar - Johnsonburg Mill	Manufacturer*	PA	0	0
Domtar Aw Llc	Manufacturer*	WI	2	0
Domtar Aw Llc Ashdown Mill	Manufacturer*	CT	6	0
Domtar Paper Co Llc	Manufacturer*	SC	3	0
Domtar Paper Co Llc Hawesville Mill	Manufacturer*	KY	13	0
Domtar Paper Co Llc Plymouth Mill	Manufacturer*	NC	3	0
Domtar Paper Kingsport Mill	Manufacturer*	TN	14	0
Donald C Cook	Generator	MI	4	0
Doncasters Inc Precision Castings New England	Manufacturer*	CT	4	0
Doncasters New England Airfoil	Manufacturer*	CT	2	0
Dorchester Lumber	Manufacturer*	MD	0	0
Double Eagle Steel Coating Co	Manufacturer*	MO	4	0
Dover	Generator	OH	6	0
Dover Chemical Corp	Manufacturer*	OH	6	0
Dow Chemical Co	Manufacturer*	DE	15	1
Dow Chemical Usahanging Rock P Lant	Manufacturer*	OH	9	0
Dow Corning Alabama Inc	Manufacturer*	AR	20	0
Dow Corning Corp	Manufacturer*	KY	19	0
Dow Haltermann Plant 2	Manufacturer*	TX	3	0
Dow-Corning	Manufact urer*	MN	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Dpc Enterprises Lp	Manufacturer*	LA	4	0
Dpt Laboratories @ Lakewood Ind Pk	Manufacturer*	NJ	8	0
Draka Cableteq Usa	Manufacturer*	MA	4	0
Dresden	Generator	IL	5	0
Driscoll Management Llc	Manufacturer*	LA	3	0
Drs Tactical Systems Inc	Manufacturer*	GA	8	0
Dsm Chemicals North America Inc	Manufacturer*	GA	7	0
Dsm Desotech Inc	Manufacturer*	IL	3	0
Dsm Nutritional Products	Manufacturer*	UT	5	0
Dsm Nutritional Products Llc	Manufacturer*	NJ	2	0
Dsm Pharmaceuticals Inc	Manufacturer*	NC	4	0
Du Pont C/O Dupont/Cooper River Plant	Manufacturer	SC	3	0
Du Pont C/O E I Du Pont De Nemours	Manufacturer	TN	27	0
Du Pont C/O E I Du Pont De Nemours & Co., Victoria Plant	Manufacturer	TX	3	0
Du Pont Camden Plant	Manufacturer*	SC	1	0
Duane Arnold	Generator	IA	4	0
Dubuque	Generator	IA	7	0
Duck Creek	Generator	IL	6	0
Dudley Lumber Co	Manufacturer*	AL	16	0
Dunaway Timber Co Inc	Manufacturer*	KY	3	0
Dunkirk	Generator	NY	2	0
Dunkirk Specialty Steel Llc	Manufacturer*	OH	1	0
Dunmore Corp	Manufacturer*	NY	2	0
Dunn Paper Inc	Manufacturer*	MI	1	0
Dupont	Manufacturer	DE	8	0
Dupont Old Hickory	Manufacturer*	TN	13	0
Dupont Beaumont Works Industrial Park	Manufacturer*	TX	3	0
Dupont Belle Plant	Manufacturer*	WV	8	0
Dupont Burnside Plant	Manufacturer*	LA	4	0
Dupont Delisle Plant	Manufacturer*	NJ	10	0
Dupont Edge Moor	Manufacturer*	GA	6	0
Dupont Fayetteville Plant	Manufacturer*	NC	8	0
Dupont Fort Hill Plant	Manufacturer*	OH	19	0
Dupont Fort Madison Plant	Manufacturer*	IA	8	0
Dupont James River Plant	Manufacturer*	VA	1	0
Dupont Johnsonville Plant	Manufacturer*	TX	12	0
Dupont Kinston Plant	Manufacturer*	NE	6	0
Dupont La Porte Plant	Manufacturer*	TX	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Dupont Louisville Plant	Manufacturer*	KY	15	0
Dupont Memphis Plant	Manufacturer*	TX	4	0
Dupont Sabine River Works	Manufacturer*	TX	3	0
Dupont Spruance Plant	Manufacturer*	VT	1	0
Dupont Teijin Films	Manufacturer*	SC	3	0
Dupont Teijin Films Cedar Creek Site	Manufacturer*	NC	1	0
Dupont Washington Works	Manufacturer*	WV	11	0
Dur-O-Wal Wire Inc	Manufacturer*	IL	3	0
Dura-Bond Pipe Llc	Manufacturer*	PA	0	0
Durez Corp	Manufacturer*	OH	10	0
Duro Bag Mfg Co	Manufacturer*	KY	2	0
Duro Standard Products Co	Manufacturer*	LA	19	0
Dutton-Lainson Company	Manufacturer*	NH	4	0
Dw National Standard - Niles Llc	Manufacturer*	MI	4	0
Dynachem Inc	Manufacturer*	IL	17	0
Dynamet Inc	Manufacturer*	PA	9	0
Dynasil Corp	Manufacturer*	NJ	2	0
Dynea Usa Incorporated	Manufacturer*	NC	1	0
Dyno Nobel Inc (Donora Plant)	Manufacturer*	PA	4	0
Dyno Nobel Incorporated Nitrogen Division (Formerl	Manufacturer*	MO	8	0
Dyno Overlays Incorporated	Manufacturer*	NC	1	0
E & V Energy Corp	Manufacturer*	PA	1	0
E B Eddy Paper Inc	Manufacturer*	MI	4	0
E C Gaston	Generator	AL	23	1
E D Edwards	Generator	IL	6	0
E R Squibb & Sons Llc	Manufacturer*	NJ	2	0
E S Joslin	Generator	TX	9	0
E W Brown	Generator	KY	11	0
E. I. Du Pont De Nemours & Co., Inc.	Manufacturer	KY	15	0
E. I. Dupont	Manufacturer	TN	20	0
E.I. Dupont De Nemours & Co. Inc.	Manufacturer	VA	3	0
Eagle Chemical Co	Manufacturer*	AL	14	0
Eagle Mountain	Generator	TX	3	0
Earhart Site - Unisys Corp.	Manufacturer*	TN	14	0
East Alabama Lumber Co Inc	Manufacturer*	AL	16	0
East Bend	Generator	KY	19	0
East Perry Lumber Co.	Manufacturer*	MO	4	0
East River	Generator	NY	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Eastalco Aluminum Co	Manufacturer*	MO	1	0
Eastern Alloys Inc	Manufacturer*	NY	1	0
Eastern Hardwoods - Dailey Sawmill	Manufacturer*	WV	0	0
Eastern Paper Co.	Manufacturer	ME	1	0
Eastern Sheet Metal & Plate Wo	Manufacturer*	NJ	6	0
Eastlake	Generator	OH	1	0
Eastman Chemical Co South Carolina Operations	Manufacturer*	SC	3	0
Eastman Chemical Co Tennessee Operations	Manufacturer*	TN	14	0
Eastman Chemical Company	Manufacturer*	PA	4	0
Eastman Chemical Company Arkansas Eastman Division	Manufacturer	AR	5	0
Eastman Chemical Texas City Inc	Manufacturer*	TX	4	0
Eastman Specialties Corp	Manufacturer*	MI	4	0
Easton (Ny) Facility C/O Hollingsworth & Vose Co.	Manufacturer	NY	1	0
Eaton	Generator	MS	3	1
Eaton Corp - Fluid Conveyance Division	Manufacturer*	OH	1	0
Ecd Inc	Manufacturer*	NJ	6	0
Eckart Effect Pigments	Manufacturer*	KY	15	0
Eckert Station	Generator	MI	2	0
Ecolab Inc	Manufacturer*	IL	4	0
Ecusta Business Development Center Llc	Manufacturer*	NC	4	0
Eddystone	Generator	PA	2	0
Edge Moor	Generator	DE	9	0
Edgewater	Generator	WI	1	0
Edoco	Manufacturer*	CO	11	0
Edwin I Hatch	Generator	GA	11	0
Ei Dupont De Nemours & Company	Manufacturer*	SC	3	0
Eka Chemicals Inc	Manufacturer*	MT	14	0
El Dorado Chemical Co	Manufacturer*	AR	6	0
El Dorado Refining Co A Div Of Equilon Enterprises Llc	Manufacturer	KS	3	0
El Segundo	Generator	CA	15	1
Elan Chemical Co	Manufacturer*	NJ	3	0
Elco Corp	Manufacturer*	OH	0	0
Electralloy	Manufacturer*	PA	4	0
Electric Materials Co	Manufacturer*	PA	1	0
Electro Cycle Inc	Manufacturer*	KY	1	0
Elementis Chromium Inc	Manufacturer*	NC	2	0
Elevance Natchez Inc/Ers Acquisition Corp	Manufacturer*	MS	5	0
Elf Atochem North America, Inc.	Manufacturer	MI	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Eliskim Inc	Manufacturer*	SC	2	0
Elk River	Generator	MN	0	0
Elkem Metals Co - Ashtabula Lp	Manufacturer*	OH	1	0
Elkem Metals Company	Manufacturer	WV	8	0
Elkem Metals Company	Manufacturer	WV	8	0
Ellis Metals Inc	Manufacturer*	AR	18	0
Ellwood National Forge Co	Manufacturer*	PA	3	0
Ellwood Quality Steels Co	Manufacturer*	PA	4	0
Elmer Smith	Generator	KY	13	0
Elmer W Stout	Generator	IN	11	0
Elrama	Generator	PA	2	0
Embassy Powered Metals Inc	Manufacturer*	PA	0	0
Emco Chemical Distributors Inc	Manufacturer*	IL	2	0
Emd Chemicals Incorporated	Manufacturer*	IL	11	0
Emerald Carolina Chemical Llc	Manufacturer*	NC	1	0
Emerald Kalama Chemical Llc	Manufacturer*	WA	12	5
Emerald Performance Materials Llc	Manufacturer*	IL	6	0
Emerald Polymer Additives Llc	Manufacturer*	OH	6	0
Empire Iron Mining Partnership	Manufacturer*	MI	1	0
Emulsitone Company	Manufacturer*	NJ	2	0
Encina	Generator	CA	14	0
Energy Absorption Systems Inc Plt 1577	Manufacturer*	AL	25	0
Engineered Polymer Solutions Inc	Manufacturer*	IL	3	0
Engineered Polymer Solutions Inc D/B/A Valspar Coa	Manufacturer*	PA	4	0
Enterprise Products Operating Llc	Manufacturer*	TX	3	0
Equilon Enterprises Llc Argo Terminal	Manufacturer*	IL	4	0
Equilon Enterprises Llc Odessa Terminal	Manufacturer*	TX	3	0
Equistar Chemicals	Manufacturer*	NJ	3	0
Equistar Chemicals Bayport Chemicals Plant	Manufacturer *	TX	4	0
Equistar Chemicals Clinton Pl Ant	Manufacturer*	IA	8	0
Equistar Chemicals Lp	Manufacturer*	TX	6	0
Equistar Chemicals Lp - Lake Charles Polymers Site	Manufacturer*	LA	3	0
Equistar Chemicals Lp Matagor Da Facility	Manufacturer*	TX	4	0
Equistar Chemicals Lp Tuscola Plant	Manufacturer*	IL	7	0
Equitable Bag Company Incorporated	Manufacturer*	TX	3	0
Erachem Comilog	Manufacturer*	TN	12	0
Erco Worldwide (Usa) Inc	Manufacturer*	WV	2	0
Ergon Asphalt & Emulsions Inc Bainbridge	Manufacturer*	HI	10	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Ergon Asphalt & Emulsions Inc Parsons	Manufacturer*	TX	17	0
Ergon Refining Inc	Manufacturer*	MS	3	0
Ergon West Virginia Inc	Manufacturer*	WY	9	0
Erickson	Generator	MI	2	0
Escanaba	Generator	MI	1	0
Escanaba Paper Co	Manufacturer*	MI	1	0
Espoma Co	Manufacturer*	OH	7	0
Essar Steel Minnesota Llc	Manufacturer*	MS	0	0
Esschem Inc	Manufacturer*	PA	2	0
Essential Metals Corp	Manufacturer*	IL	1	0
Estron Chemicals Inc	Manufacturer*	KY	9	0
Ethox Chemicals Llc	Manufacturer*	SC	2	0
Ethyl Corp	Manufacturer*	TX	3	0
Euclid Chemical Co	Manufacturer*	IL	3	0
Evans Chemetics	Manufacturer	NY	1	0
Evans Chemetics Lp	Manufacturer*	OH	1	0
Evergreen Pack./Cadron Creek	Manufacturer*	AR	1	0
Evergreen Packaging	Manufacturer*	AR	3	0
Evergreen Pulp Enterprises	Manufacturer*	FL	12	0
Everris North America Inc	Manufacturer*	TN	4	0
Evonik Degussa Corp	Manufacturer*	PA	2	0
Evonik Degussa Corp Calvert City Plant	Manufacturer*	KY	9	0
Evonik Degussa Corp Tippecanoe Laboratories	Manufacturer*	IN	17	0
Evonik Jayhawk Fine Chemicals Corp	Manufacturer*	KY	3	0
Evrz Portland	Manufacturer*	PA	12	2
Evrz Rocky Mountain Steel	Manufacturer*	CT	2	0
Exact Inc	Manufacturer*	FL	6	0
Excel Chemical Co Inc	Manufacturer*	FL	6	0
Exide Corporation	Manufacturer*	SC	1	0
Express Metal Fabricators Llc St George Steel Div	Manufacturer*	WA	3	0
Exxon Billings Refinery	Manufacturer	MT	1	0
Exxon Co. - Usa Baton Rouge Refinery	Manufacturer	LA	3	0
Exxon Mobil Corp - 99hcp	Manufacturer*	TX	3	0
Exxonmobil Baton Rouge Refinery And Chemical Plant	Manufacturer*	MD	3	0
Exxonmobil Baytown Chemical Plant	Manufacturer*	TX	0	0
Exxonmobil Billings Refinery	Manufacturer*	MT	1	0
Exxonmobil Chemical Baton Rouge Chemical Plant	Manufacturer*	LA	3	0
Exxonmobil Chemical Co	Manufacturer*	FL	9	1

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Exxonmobil Chemical Co - Baton Rouge Resin Finishi	Manufacturer*	LA	3	0
Exxonmobil Chemical Co Baton Rouge Polyolefins Pla	Manufacturer*	LA	3	0
Exxonmobil Chemical Co Baytown Olefins Plant	Manufacturer*	TX	3	0
Exxonmobil Chemical Plastics Plant	Manufacturer*	LA	4	0
Exxonmobil Joliet Refinery	Manufacturer*	IL	4	0
Exxonmobil Oil Corp - Torrance Refinery	Manufacturer*	CA	11	0
Exxonmobil Oil Corp (Dba Mobil Chemical Co)	Manufacturer*	TX	3	0
Exxonmobil Production - Hawkins Gas Plant	Manufacturer*	TX	3	0
Exxonmobil Refinery Complex	Manufacturer*	LA	6	0
Exxonmobil Refining & Supply Baytown Refinery	Manufacturer*	TX	3	0
F B Culley	Generator	IN	13	0
Fair Station	Generator	IA	8	0
Falstrom Co Inc Fabrication Div	Manufacturer*	NY	2	0
Fansteel Inc	Manufacturer*	OR	4	0
Far Rockaway	Generator	NY	8	0
Farmland Industries Inc Lawrence Nitrogen Plant	Manufacturer*	LA	6	0
Farmland Industries Incorporated Hastings Terminal	Manufacturer*	NE	4	0
Farmland Industries, Inc.	Manufacturer	KS	2	0
Faurecia Automotive Seating Inc	Manufacturer*	KY	19	0
Faust Thermographic Inc	Manufacturer*	NJ	6	0
Fayette Power Prj	Generator	TX	3	0
Fedchem Llc	Manufacturer*	PA	2	0
Federal-Mogul Powertrain	Manufacturer*	MI	2	0
Felix Schoeller Technical Papers Inc	Manufacturer*	NY	2	0
Felker Brothers	Manufacturer*	KY	10	0
Fermenta Animal Health Co	Manufacturer*	NJ	2	0
Fermi	Generator	MI	6	0
Ferro Corp	Manufacturer*	PA	9	0
Ferro Corp.	Manufacturer*	NJ	0	0
Ferro Electronic Materials	Manufacturer*	NY	1	0
Ferro Industries Inc	Manufacturer*	NJ	0	0
Fibercorr Inc	Manufacturer*	OR	6	0
Fibermark	Manufacturer*	VT	2	0
Fibermark Inc./Warren Glen	Manufacturer	NJ	2	0
Fibermark North America Inc	Manufacturer*	NY	1	0
Fibrex	Manufacturer*	MS	0	0
Fibrex Recycling Us Inc Fairmont Div	Manufacturer*	AL	0	0
Fina Oil & Chemical Co	Manufacturer*	NJ	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Finch Paper Llc	Manufacturer*	NY	1	0
Finch, Pruyn & Company, Incorporated	Manufacturer	NY	1	0
Fine Organics Corp	Manufacturer*	TX	3	0
Finite Industries Inc Subsidiary Of Scapa N A	Manufacturer*	NY	2	0
Finnchem Usa - Eastover	Manufacturer*	SC	1	0
Fireworks West International	Manufacturer*	UT	2	0
Firmenich Inc	Manufacturer*	NJ	0	0
First Chemical Corp	Manufacturer*	NC	10	0
First Quality Tissue Se Llc	Manufacturer*	SC	2	0
Fisher Scientific Co Ll C	Manufacturer*	NJ	2	0
Fisk	Generator	IL	2	0
Fitzhugh	Generator	AR	2	0
Flambeau River Papers	Manufacturer*	WI	2	0
Fleurchem	Manufacturer*	NY	1	0
Flexmag Industries Plastiform Div	Manufacturer*	NE	2	0
Flexon Industries Corp	Manufacturer*	NJ	2	0
Flexsys Monongahela Plt	Manufacturer*	PA	4	0
Flint Creek	Generator	AR	4	0
Flint Group Pigments	Manufacturer*	MN	1	0
Flint Hills Resources Chemical Intermediates	Manufacturer*	IL	4	0
Flint Hills Resources Chemical Intermediates Llc -	Manufacturer*	IL	6	0
Flint Hills Resources Corpus Christi Llc - East Pl	Manufacturer*	TX	6	0
Flint Hills Resources Corpus Christi Llc - West Pl	Manufacturer*	TX	6	0
Flint Hills Resources Fairbank Llc	Manufacturer*	IA	3	0
Flint Hills Resources Iowa Falls Llc	Manufacturer*	IA	4	0
Flint Hills Resources Pine Bend Llc	Manufacturer*	MO	8	0
Flint Hills Resources Port Arthur Llc	Manufacturer*	TX	3	0
Flo Chemical Corp	Manufacturer*	MI	0	0
Flopam Inc	Manufacturer*	MA	2	0
Florida Coast Paper Co Llc	Manufacturer*	FL	9	0
Florida Supply & Cleaning	Manufacturer*	FL	8	0
Florida Wire & Cable Inc - Sanderson Division	Manufacturer*	FL	6	0
Fmc Biopolymer Food Ingredients	Manufacturer*	MI	1	0
Fmc Corp	Manufacturer*	FL	2	0
Fmc Corp Lithium Div	Manufacturer*	NC	1	0
Fmc Corp Tonawanda Plan T	Manufacturer*	NY	3	0
Fmc Corporation Fmc Wyoming Corporation	Manufacturer	WY	3	0
Foam-Cor Company Llc	Manufacturer*	NC	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Foil Solutions	Manufacturer*	NJ	0	0
Fol Tape Llc	Manufacturer*	NC	6	0
Ford Motor Co Rouge Power & Utilities Operations	Manufacturer*	MN	4	0
Forest Laboratories Inc	Manufacturer*	NY	3	0
Forest Laboratories Inc Property	Manufacturer*	NY	3	0
Forest Product Inc Williamsbg	Manufacturer*	KY	17	0
Formaloy Corp	Manufacturer*	IL	2	0
Former Wki Facility	Manufacturer*	OH	6	0
Formica Corp	Manufacturer*	CA	11	0
Formosa Plastics Corp De	Manufacturer*	DE	2	0
Formosa Plastics Corp Illinois	Manufacturer*	IL	5	0
Formosa Plastics Corp Louisiana	Manufacturer*	LA	3	0
Formosa Plastics Corp Texas	Manufacturer*	TX	4	0
Fort Calhoun	Generator	NE	5	0
Fort Churchill	Generator	NV	2	0
Fort James Operating Co.	Manufacturer	ME	2	0
Fort James Operating Company	Manufacturer	MI	1	0
Fort James Operating Company - Green Bay - West	Manufacturer	WI	0	0
Fort James Operating Company Savannah River Mill	Manufacturer	GA	9	0
Fort Martin	Generator	WV	0	0
Fort Myers	Generator	FL	10	1
Fort St Vrain	Generator	CO	2	0
Fort Wayne Metals Research Products Corp (Ardmore	Manufacturer*	IN	3	0
Fortron Industries	Manufacturer*	NC	2	0
Four Corners	Generator	NM	8	1
Four M Paper Corporation	Manufacturer	IA	5	0
Fox Lake	Generator	MN	1	0
Fox River Paper Co. - Appleton Mill	Manufacturer	WI	0	0
Framatome Cogema Fuels	Manufacturer*	WA	2	0
Frank E Ratts	Generator	IN	13	0
Frank Lumber Company Incorporated	Manufacturer*	OR	8	2
Franklin Lumber Company	Manufacturer*	MS	3	0
Frantz Manufacturing Co Sterling Steel Ball Div	Manufacturer*	IL	6	0
Fred Netterville Lumber Company	Manufacturer*	MS	2	0
Frederick & May Lumber Co	Manufacturer*	KY	20	0
Freedom Textile Chemical Company	Manufacturer*	SC	1	0
Freeman Industries Inc	Manufacturer*	NY	1	0
Fremont Wire Co.	Manufacturer*	KY	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
French Island	Generator	WI	6	0
French Paper Company	Manufacturer*	MI	4	0
Fresenius Kabi Usa Llc	Manufacturer*	OH	3	0
Fresenius Medical Care	Manufacturer*	PA	3	0
Frontier El Dorado Refining Llc	Manufacturer*	KS	3	0
Frontier Refining Inc	Manufacturer*	WY	1	0
Frost Sawmill - Frost Sawmill	Manufacturer*	MO	3	0
Frutarom Usa Inc	Manufacturer*	NJ	2	0
Fuel Sys. Textron	Manufacturer*	IN	6	0
Fujifilm Electronic Materials	Manufacturer*	SC	4	0
Fujifilm Electronic Materials Usa	Manufacturer*	RI	4	0
Fusion Paperboard	Manufacturer*	FL	0	0
Futurefuel Chemical Co	Manufacturer*	KS	5	0
Fw Winter Inc & Co	Manufacturer*	NY	2	0
G G Allen	Generator	NC	1	0
G.F. Weaton Power Station, Zinc Corporation Of America	Manufacturer	PA	9	0
Gabriel Performance Products Llc	Manufacturer*	OH	0	0
Gac Chemical	Manufacturer*	MI	1	0
Gadsby	Generator	UT	3	0
Gadsden	Generator	AL	16	0
Gaertner Foundries	Manufacturer*	SC	2	0
Galey & Lord Society Hill	Manufacturer*	SC	3	0
Gallatin	Generator	TN	20	0
Gallatin Steel Co	Manufacturer*	LA	19	0
Garden State Paper Co.	Manufacturer	NJ	2	0
Garland Gaston Lumber Co. Inc.	Manufacturer*	AR	7	0
Garnett Wood Products	Manufacturer*	MO	8	0
Gateway Chemicals Inc	Manufacturer*	GA	6	0
Gautier Steel Ltd	Manufacturer*	PA	1	0
Gay & Robinson, Inc.	Manufacturer	HI	6	0
Gaylord Container Corp.	Manufacturer*	CT	11	1
Ge Aircraft Engines	Manufacturer*	OH	19	0
Ge Betz Langhorne	Manufacturer*	PA	2	0
Ge Betz Langhorne Fac	Manufacturer*	PA	2	0
Ge Betz Trevoise Fac	Manufacturer*	PA	2	0
Ge Co	Manufacturer*	NJ	5	0
Ge Company Aircraft Engines	Manufacturer	MA	7	0
Ge Water & Process Technologies	Manufacturer*	IL	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Gen J M Gavin	Generator	OH	11	0
General Biodiesel Seattle Llc	Manufacturer*	WA	12	1
General Cable Industries Inc.	Manufacturer*	CT	6	0
General Chemical	Manufacturer*	NJ	2	0
General Chemical Corp	Manufacturer	DE	1	0
General Chemical Corp	Manufacturer	DE	3	0
General Chemical Corp.-Newark Plant	Manufacturer	NJ	3	0
General Chemical Corporation	Manufacturer*	CO	2	0
General Chemical Corporation Bay Point Works	Manufacturer*	CA	15	1
General Chemical Llc	Manufacturer*	FL	5	0
General Chemical Llc Augusta Plant	Manufacturer*	GA	7	0
General Chemical Llc Delaware Valley Works	Manufacturer*	FL	6	0
General Chemical Llc East St Louis Works	Manufacturer*	IL	3	0
General Devices Co Inc	Manufacturer*	IN	10	0
General Electric Aircraft Engine Group	Manufacturer*	MA	1	0
General Electric Aircraft Engines	Manufacturer*	ME	2	0
General Electric Co Vallecitos Nuclear Center	Manufacturer*	CA	15	1
General Electric Company	Manufacturer	IN	13	0
General Electric Company	Manufacturer	IN	2	0
General Electric Tungsten Products Plant	Manufacturer*	OH	0	0
General Fabricators	Manufacturer*	LA	2	0
General Mills Inc	Manufacturer*	NC	3	0
General Mills Operations Inc	Manufacturer*	PA	1	0
General Oil Co	Manufacturer*	MN	4	0
General Steel Fabricators	Manufacturer*	MO	3	0
Geneva Steel Llc	Manufacturer*	UT	3	0
Genoa	Generator	WI	7	0
Gentex Corp	Manufacturer*	0	0	0
Gentleman	Generator	NE	3	0
Genzyme Biosurgery	Manufacturer*	NJ	2	0
Genzyme Corp	Manufacturer*	MA	2	0
Geo Specialty Chemicals Inc	Manufacturer*	LA	2	0
Geo Specialty Chemicals Inc Westlake Facility	Manufacturer*	LA	3	0
Geo Specialty Chemicals Trimet Products Group	Manufacturer*	PA	2	0
George A. Dickel & Company	Manufacturer*	TN	20	0
George Evans Corp	Manufacturer*	IL	8	0
Georgia -Pacific Chemicals Llc	Manufacturer*	GA	11	0
Georgia Gulf Chemicals & Vinyl	Manufacturer*	TX	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Georgia Gulf Chemicals & Vinyl S Llc	Manufacturer*	LA	2	0
Georgia Gulf Chemicals & Vinyls Llc	Manufacturer*	MS	14	0
Georgia Gulf Lake Charles Llc	Manufacturer*	LA	3	0
Georgia Pacific Cedar Springs Llc	Manufacturer*	GA	19	0
Georgia Pacific Consumer Products Lp	Manufacturer*	WI	0	0
Georgia Pacific Consumer Products Lp Wauna Mill	Manufacturer*	PA	13	5
Georgia Pacific Corp - Big Island Mill	Manufacturer*	VA	2	0
Georgia Pacific Corporation	Manufacturer*	MI	1	0
Georgia Pacific Corporation Plywood	Manufacturer*	SC	2	0
Georgia Pacific Leaf River Cellulose Llc	Manufacturer*	MS	2	0
Georgia Pacific Wood Products Llc	Manufacturer*	NC	2	0
Georgia Pacific Wood Products Llc - Columbia Ms	Manufacturer*	MS	3	0
Georgia Pacific Wood Products Llc Bay Springs Ms	Manufacturer*	MS	3	0
Georgia Pacific Wood Products Llc Belk Al	Manufacturer*	AL	20	0
Georgia-Pacific Brewton Llc	Manufacturer*	AL	21	0
Georgia-Pacific Chemicals Llc	Manufacturer*	PA	9	0
Georgia-Pacific Chemicals Llc	Manufacturer*	MS	3	0
Georgia-Pacific Consumer Operations Llc	Manufacturer*	FL	6	1
Georgia-Pacific Consumer Products (Camas) Llc	Manufacturer*	WA	13	3
Georgia-Pacific Consumer Products Lp	Manufacturer*	AR	18	0
Georgia-Pacific Consumer Products Lp - Savannah Ri	Manufacturer*	GA	11	0
Georgia-Pacific Corp	Manufacturer	MS	3	1
Georgia-Pacific Corp	Manufacturer	MS	7	1
Georgia-Pacific Corp Rainelle Wv	Manufacturer*	WV	0	0
Georgia-Pacific Corp Richwood Wv	Manufacturer*	WV	0	0
Georgia-Pacific Corp.	Manufacturer	GA	19	0
Georgia-Pacific Crossett Plywood/Studmi Ll Complex	Manufacturer*	CA	3	0
Georgia-Pacific Llc	Manufacturer*	PA	11	1
Georgia-Pacific Sawmill	Manufacturer*	AR	3	0
Georgia-Pacific West Inc.	Manufacturer*	WA	12	2
Georgia-Pacific Wood Products Llc - Mt Hope Osb	Manufacturer*	WV	0	0
Gerald Andrus	Generator	MS	6	0
Gerard Daniel Worldwide	Manufacturer*	PA	3	0
Gerdau - Fort Smith Mill	Manufacturer*	AR	3	0
Gerdau Ameristeel Joliet Mill	Manufacturer*	IL	4	0
Gerdau Ameristeel - Charlotte Steel Mill	Manufacturer*	NC	1	0
Gerdau Ameristeel Inc Jacksonville Steel Mill Div	Manufacturer*	IA	6	0
Gerdau Ameristeel Sayreville Inc	Manufacturer*	NY	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Gerdau Ameristeel St Paul Mill	Manufacturer*	MN	8	0
Gerdau Ameristeel Us Inc	Manufacturer*	IA	2	0
Gerdau Knoxville	Manufacturer*	TN	27	0
Gerdau Long Steel Na - Jackson Mill	Manufacturer*	TX	5	0
Gerdau Special Steel North America	Manufacturer*	MI	2	0
Gfs Chemicals Inc	Manufacturer*	OK	10	0
Ghent	Generator	KY	19	0
Gibbons Creek	Generator	TX	3	0
Gibraltar Strip Steel Inc *	Manufacturer*	PA	0	0
Gibson Tube Inc	Manufacturer*	NY	0	0
Gilbert Hardwood Centers Incorporated	Manufacturer*	NC	1	0
Giles & Kendall Inc	Manufacturer*	AL	41	0
Giles Chemical Corporation	Manufacturer*	NC	9	0
Gilkey Lumber Company Incorporated	Manufacturer*	NC	0	0
Gillette Company	Manufacturer	MA	7	0
Gillette Manufacturing	Manufacturer*	NJ	2	0
Gilman Building Products Llc	Manufacturer*	FL	6	0
Ginna	Generator	NY	1	0
Gj Chemical Co Inc	Manufacturer*	NJ	2	0
Gkn Sinter Metals - Airport Ro Ad	Manufacturer*	PA	0	0
Gkn Sinter Metals - Barton Str Eet	Manufacturer*	PA	0	0
Gkn Sinter Metals Cameron Rd	Manufacturer*	PA	0	0
Glaxosmithkline Consumer Brands Lp	Manufacturer*	NJ	2	0
Glaxosmithkline Inc	Manufacturer*	NC	3	0
Glaxosmithkline Llc	Manufacturer*	NY	1	0
Glaxosmithkline - South Campus	Manufacturer*	NC	1	0
Glen Lyn	Generator	VA	1	0
Glenwood	Generator	NY	7	0
Global Octanes Corp	Manufacturer*	TX	3	0
Global Tungsten & Powders Corp	Manufacturer*	PA	0	0
Globe Building Materials Inc	Manufacturer*	WI	3	0
Globe Metallurgical	Manufacturer*	AL	22	3
Globe Metallurgical Inc	Manufacturer*	OH	12	0
Golden Aluminum	Manufacturer*	FL	1	0
Golden West Refining Co	Manufacturer*	CA	10	0
Goldendale Aluminum Co	Manufacturer*	WA	8	0
Goldendale Aluminum Company	Manufacturer	WA	8	3
Goodrich Carbon Operations	Manufacturer*	CO	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Goodrich Pump & Engine Control Systems Inc	Manufacturer*	CT	5	0
Gorgas	Generator	AL	19	0
Gorge Energy Div-Sds Lumber Company	Manufacturer	WA	9	3
Gorham Paper & Tissue	Manufacturer*	NJ	1	0
Goudey	Generator	NY	0	0
Gould Street	Generator	MD	8	0
Gp Wood Products South Llc Gurdon Plywood & Lumber	Manufacturer*	AR	5	0
Grace Davison - Edison	Manufacturer*	NJ	0	0
Grace Davison Catalysts Plant	Manufacturer*	MA	3	0
Grace Davison Chemical	Manufacturer*	MD	3	0
Grace Davison East Chicago	Manufacturer*	IN	3	0
Graceville Sawmill	Manufacturer*	FL	7	0
Graham	Generator	TX	3	0
Graham & Hammer Lumber Co	Manufacturer*	KY	26	0
Graham Packaging Px Company	Manufacturer*	AL	21	0
Grain Processing Corp	Manufacturer*	IA	8	0
Grand Tower	Generator	IL	4	0
Granite Falls Energy Llc	Manufacturer*	MN	2	0
Grant Town Power Plant	Generator	WV	8	0
Graphic Packaging International Inc	Manufacturer*	IL	6	0
Graphic Packaging/Smurfit/Stone	Manufacturer*	KS	3	0
Grays Ferry Cogeneration Partnership	Generator	PA	7	0
Grayson Lumber Corp	Manufacturer*	AL	22	0
Grda	Generator	OK	3	0
Great Lakes Chemical - Central	Manufacturer*	AR	3	0
Great Lakes Chemical - South Plant	Manufacturer*	AR	3	0
Great Lakes Chemical Corp.	Manufacturer*	WV	2	0
Great Lakes Chemical West Plant	Manufacturer*	AR	1	0
Great Southern Wood - Buckner Inc	Manufacturer*	MO	4	0
Great Western Inorganics Inc	Manufacturer*	CO	2	0
Green Bay Packaging Inc	Manufacturer*	WI	0	0
Green Bay Packaging Inc./Arkansas Kraft Division	Manufacturer	AR	3	0
Green Bay Packaging/Ark Kraft	Manufacturer*	AR	3	0
Green Diamond Sand Products	Manufacturer*	PA	7	1
Green Park-Nomax Llc	Manufacturer*	MO	3	0
Green Plains Shenandoah Llc	Manufacturer*	IA	2	0
Green River	Generator	KY	5	0
Green River Biodiesel	Manufacturer*	AL	20	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Green Tree Chemical Technologies Inc Nitrocellulos	Manufacturer*	NJ	0	0
Green Valley Chemical Corp	Manufacturer*	IA	2	0
Greene County	Generator	AL	20	0
Greenfield Products Inc	Manufacturer*	PA	3	0
Greenfield Research Laboratories	Manufacturer*	IN	6	0
Greenlee Textron Inc	Manufacturer*	KY	10	0
Greens Bayou	Generator	TX	3	0
Greenville Tube Co Llc	Manufacturer*	AR	2	0
Greenwd Mls:Lbrty#2 (Merge W/1880-0005))	Manufacturer*	SC	1	0
Greif Packaging Containerboard Mill	Manufacturer*	VT	2	0
Grossman Iron And Steel	Manufacturer*	MO	3	0
Groveton Paper Board Mill (Former)	Manufacturer*	NH	2	0
Gst Autoleather Inc	Manufacturer*	MD	0	0
Gtp Greenville Inc	Manufacturer*	SC	1	0
Guardian Drug Co	Manufacturer*	NJ	0	0
Guardian Fiberglass Inc	Manufacturer*	SC	2	0
Guardian Lima Llc	Manufacturer*	OH	4	0
Guilford Mills Inc Guilford East Site	Manufacturer*	NC	2	0
Gulbrandsen Chemicals Inc	Manufacturer*	SC	4	0
Gulco Inc	Manufacturer*	NJ	2	0
Gulf Chemical And Metallurgical Freeport	Manufacturer*	TX	5	0
Gulf States Steel, Inc.	Manufacturer	AL	25	0
Gw Lisk Co Inc	Manufacturer*	NY	1	0
H B Robinson	Generator	SC	3	0
H G Toler And Son Lumber Company	Manufacturer*	AR	4	0
H H Technologies	Manufacturer*	AR	22	0
H L Spurlock	Generator	KY	17	0
H Reisman Corp	Manufacturer*	NJ	6	0
H T Pritchard	Generator	IN	11	0
H W Culp Lumber Co	Manufacturer*	NC	1	0
Ha International Llc	Manufacturer*	IL	3	0
Hach Co	Manufacturer*	IA	1	0
Hadady Machining Co Inc	Manufacturer*	IL	2	0
Halliburton Energy Svcs	Manufacturer*	LA	3	0
Halliburton Energy/Magnet Cove	Manufacturer*	CA	6	0
Hallmark Cards Inc	Manufacturer*	KY	6	0
Hallstar Co Ester Solutions Facility	Manufacturer*	IL	4	0
Halocarbon Products Corporation	Manufacturer*	SC	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Halosource Inc	Manufacturer*	WV	14	0
Hamilton	Generator	OH	1	0
Hammond	Generator	GA	17	0
Hammond Lead Products	Manufacturer*	PA	2	0
Hampshire Chemical Corporation	Manufacturer*	TX	3	0
Hampton Lumber Mill	Manufacturer*	WA	9	2
Hampton Lumber Mills Randle	Manufacturer *	WA	6	2
Hamrick Industries I 85 Plant	Manufacturer*	SC	1	0
Handley	Generator	TX	3	0
Handy & Harman Tube Co	Manufacturer*	PA	2	0
Hanes Dye & Finishing Co	Manufacturer*	NC	0	0
Hankins Inc	Manufacturer*	MS	3	0
Harbor	Generator	CA	15	0
Harbor Beach	Generator	MI	1	0
Harcros Chemicals Inc	Manufacturer*	GA	21	0
Harlee Branch	Generator	GA	5	0
Harold R Henrich Inc	Manufacturer*	NJ	8	0
Harrell Industries Inc	Manufacturer*	TX	2	0
Harrigan Lumber Company	Manufacturer*	AL	24	0
Harris	Generator	NC	1	0
Harrison	Generator	WV	3	0
Harsco Metals Ecr	Manufacturer*	IN	3	0
Hart Metals Mfg	Manufacturer*	PA	2	0
Hartford City Paper Llc	Manufacturer*	IN	7	0
Hartz Mountain Corp	Manufacturer*	NJ	2	0
Hatfield's Ferry	Generator	PA	4	0
Havana	Generator	IL	6	0
Havco Wood Products	Manufacturer*	MO	6	0
Hawthorn	Generator	MO	4	0
Hayden	Generator	CO	3	0
Haynes	Generator	CA	13	0
Hazen Paper Co	Manufacturer*	MA	3	0
Hazlehurst Lumber Co	Manufacturer*	MS	4	0
Hb Fuller Co	Manufacturer*	IL	5	0
Hdk Wood Products	Manufacturer*	OK	0	0
Healy	Generator	AK	1	0
Heartland Corn Products	Manufacturer*	MO	5	0
Heat Transfer Products Group	Manufacturer*	AL	34	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Hebeler Corporation	Manufacturer*	NY	3	0
Heber Geothermal Co	Generator	CA	9	0
Heico Aerospace Corp	Manufacturer*	FL	6	0
Hellers Carbonic West	Manufacturer*	IL	1	0
Hemlock Semiconductor Corp	Manufacturer*	MO	1	0
Hendrix Manufacturing Ltd	Manufacturer*	LA	1	0
Henkel Corp	Manufacturer*	NC	1	0
Henkel Corporation	Manufacturer*	NE	1	0
Hennepin	Generator	IL	6	0
Heraeus Materials Technology Llc	Manufacturer*	CA	10	0
Heraeus Precious Metals Management Llc	Manufacturer*	NJ	2	0
Herbert A Wagner	Generator	MD	8	0
Hercules Chemical Co Inc	Manufacturer*	NJ	2	0
Hercules Inc	Manufacturer*	MI	1	0
Hercules Inc (Parlin Plant)	Manufacturer*	NJ	0	0
Heritage Cutlery	Manufacturer*	SC	3	0
Hershey Puerto Rico Inc	Manufacturer*	PR	2	2
Heskett	Generator	ND	5	0
Hess Corp - Port Reading Refinery	Manufacturer*	NJ	6	0
Hess Corp Edgewater Terminal	Manufacturer*	NJ	2	0
Hess Corp First Reserve Terminal	Manufacturer*	NJ	0	0
Hexcel Corp	Manufacturer*	NJ	2	0
Hexcel Windsor	Manufacturer*	CT	2	0
Hgi Skydyne	Manufacturer*	NY	1	0
Hibbing Taconite Co	Manufacturer*	MN	1	0
High Bridge	Generator	MN	8	0
Highwater Ethanol Llc	Manufacturer*	MN	1	0
Hillsdale Tool & Manufacturing Co. Inc. Hamilton E	Manufacturer*	IN	6	0
Hillside Office Park	Manufacturer*	NJ	6	0
Hinckley Yacht Service	Manufacturer*	SC	4	0
Hitachi Magnetics Corporation	Manufacturer*	MI	3	0
Hitchiner Mfg Co Inc	Manufacturer*	NH	2	0
Hmp&L Station 2	Generator	KY	8	0
Hoeganaes Corp	Manufacturer*	NJ	2	0
Hoffmann-La Roche Inc	Manufacturer*	NJ	2	0
Hollingsworth & Vose Co	Manufacturer*	GA	7	0
Hollingsworth & Vose Company	Manufacturer*	MA	2	0
Hollingsworth & Vose Greenwich Mill	Manufacturer*	NY	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Holliston Llc	Manufacturer*	WA	29	0
Holly Refining & Marketing - Tulsa Llc/Tulsa East	Manufacturer*	OK	3	0
Holly Refining & Marketing - Tulsa Llc/Tulsa West	Manufacturer*	OK	3	0
Holly Refining & Marketing Co Woods Cross Refinery	Manufacturer*	UT	3	0
Homan Forest Products Co Inc.	Manufacturer*	AL	46	0
Homer City	Generator	PA	1	0
Homer Gregory & Co Inc	Manufacturer*	KY	20	0
Homeshield	Manufacturer*	IL	1	0
Honeywell - Uop Llc	Manufacturer*	AL	14	0
Honeywell Burdick & Jackson	Manufacturer*	MI	2	0
Honeywell Electronic Materials Inc	Manufacturer*	WA	5	0
Honeywell Inc (Formerly Alli Ed-Signal)	Manufacturer*	TX	3	0
Honeywell Inc.	Manufacturer*	NC	3	0
Honeywell International Inc	Manufacturer*	IL	11	0
Honeywell International Inc - Baton Rouge Plant	Manufacturer*	LA	3	0
Honeywell International Inc Danville Works	Manufacturer*	IL	11	0
Honeywell International Inc Geismar Plant	Manufacturer*	LA	5	0
Honeywell International Inc Hopewell Plant	Manufacturer*	VA	1	0
Honeywell International Inc.	Manufacturer*	OH	9	0
Honeywell Resins & Chemicals Llc	Manufacturer*	VA	1	0
Honeywell Specialty Materials	Manufacturer*	MO	5	0
Honolulu	Generator	HI	6	0
Hood Industries Inc.	Manufacturer*	LA	1	0
Hoot Lake	Generator	MN	0	0
Hoover Materials Handling Group Inc.	Manufacturer*	NE	2	0
Hope Creek	Generator	NJ	9	0
Horizon Milling	Manufacturer*	NY	1	0
Horsehead Corp Monaca Smelter	Manufacturer*	PA	9	0
Horseshoe Lake	Generator	OK	2	0
Hospira Boulder Inc	Manufacturer*	CT	2	0
Hospira Inc	Manufacturer*	IL	2	0
Hot Cell Services Corp	Manufacturer*	WA	12	0
Hot Spring Co-Jones Mill Wwtf	Manufacturer*	IL	7	0
Houston Refining Lp	Manufacturer*	TX	3	0
Hovensa L.L.C.	Manufacturer	VI	5	2
Howard Industries	Manufacturer*	NC	2	0
Howco Environmental Services	Manufacturer*	FL	7	0
Howell Plywood	Manufacturer*	AL	19	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Howmet Corp	Manufacturer*	NY	2	0
Hubbell Power Systems - East St/Plastics	Manufacturer*	MO	1	0
Hudson	Generator	NJ	7	0
Hudson Lock	Manufacturer*	MD	0	0
Huey Stockstill Inc	Manufacturer*	MT	5	0
Hughes Treitler	Manufacturer*	NY	3	0
Hugo	Generator	OK	5	0
Huhtamaki Inc	Manufacturer*	MO	2	0
Huish Detergents / Detergent Manufacturing	Manufacturer*	WY	3	0
Huish Detergents Incorporated	Manufacturer*	LA	10	0
Huls America Inc Nuodex Inc	Manufacturer*	NJ	0	0
Hummel Croton Inc	Manufacturer*	NJ	0	0
Hunlock Power Sta	Generator	PA	0	0
Hunt Manufacturing Co-Philadel	Manufacturer*	TX	0	0
Hunt Refining Co	Manufacturer*	AL	20	0
Hunt Refining Co A Corp	Manufacturer*	AL	20	0
Hunt Refining Company	Manufacturer*	AL	17	0
Hunt Southland Refining Co - Sandersville	Manufacturer*	MS	2	0
Hunt Southland Refining Company	Manufacturer*	MS	5	0
Hunter	Generator	UT	3	0
Hunter Douglas Tupelo Center	Manufacturer*	MS	5	0
Hunter Engineering Co	Manufacturer*	MS	5	0
Huntersville Hardwoods Incorporated	Manufacturer*	NC	1	0
Huntington	Generator	UT	3	0
Huntington Alloys Corp (Part)	Manufacturer*	WV	0	0
Huntington Beach	Generator	CA	13	0
Huntsman Corporation	Manufacturer*	NJ	2	0
Huntsman Petrochemical Corp	Manufacturer*	NC	9	0
Huntsman Petrochemical Llc	Manufacturer*	TX	3	0
Huntsman Petrochemical Llc Port Neches Facility	Manufacturer*	TX	3	0
Hurt Finishing Plant	Manufacturer*	AL	2	0
Hydro Aluminum	Manufacturer*	KY	13	0
Hydro Aluminum North America Inc	Manufacturer*	MO	3	0
Hydromet Environmental Usa Incorporated	Manufacturer*	IL	8	0
Hydrosol Inc.	Manufacturer*	IL	4	0
Hyma Devore Lumber Mill Brokenstraw	Manufacturer*	SC	3	0
Iatan	Generator	MO	3	0
Ici Americas Inc	Manufacturer*	PA	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Ici Americas Incorporated	Manufacturer*	NJ	1	0
Icl Performance Products Lp	Manufacturer*	NJ	6	0
Icl-Ip America Inc	Manufacturer*	WY	5	0
Idaho Forest Group -- Moyie Springs	Manufacturer*	ID	1	1
Idaho Timber Corp. Of Carthage	Manufacturer*	AR	6	0
Ideal Tape Co	Manufacturer*	MA	5	0
Iff Chemical Holdings Inc	Manufacturer*	FL	6	0
Illini Bio-Energy Llc	Manufacturer*	IL	5	0
Illinois Corn Processing Llc	Manufacturer*	IL	6	0
Imc Kalium Ogden Corp	Manufacturer	UT	3	0
Imc-Agrico Company, Uncle Sam Plant	Manufacturer	LA	2	0
Imc-Agrico Nichols Plant	Manufacturer*	FL	4	0
Imperial Aluminum-Scottsboro Llc	Manufacturer*	AL	34	0
Imperial Holly Corporation	Manufacturer*	CO	5	0
Imperium Grays Harbor Llc	Manufacturer*	WI	12	1
Importers Service Corp	Manufacturer*	NJ	2	0
Ims Engineered Products Llc	Manufacturer*	IL	4	0
Inchem Corporation	Manufacturer*	TN	2	0
Ind Gasket & Shim Co Inc	Manufacturer*	PA	9	0
Indeck West Enfield Energy Center	Generator	ME	2	0
Independence	Generator	AR	5	0
Indian Point	Generator	NY	7	0
Indian Point 3	Generator	NY	7	0
Indian River	Generator	DE	8	0
Indian River Plant	Generator	FL	11	1
Indiana Steel & Wire Acquisition Company, Ltd.	Manufacturer	IN	8	0
Indiantown Cogeneration Facility	Generator	FL	5	0
Indium Corp Of America	Manufacturer*	NY	0	0
Industrial Chemicals Corp	Manufacturer*	TN	2	2
Industrial Color Inc	Manufacturer*	IL	4	0
Industrial Parts Specialities	Manufacturer*	LA	2	0
Ineos Abs (Usa) Corp	Manufacturer*	OH	19	0
Ineos Nova Llc	Manufacturer*	IL	4	0
Ineos Oxide - A Division Of Ineos Americas Llc	Manufacturer*	LA	1	0
Ineos Phenol	Manufacturer*	AL	16	0
Ineos Polymers	Manufacturer*	UT	3	0
Ineos Silicas Americas	Manufacturer*	IL	4	0
Ineos Usa Llc	Manufacturer*	OH	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Ineos Usa Llc Green Lake Plant	Manufacturer*	TX	5	0
Ineos Usa Llc - Chocolate Bayou Plant	Manufacturer*	TX	4	0
Inexcon Maine Inc.	Manufacturer	ME	1	0
Ingredion Inc	Manufacturer*	NC	4	0
Ingredion Inc Argo Plant	Manufacturer*	IN	4	0
Ingredion Inc Stockton Plant	Manufacturer*	CO	8	0
Inland Empire Paper	Manufacturer*	WA	5	0
Inland Paperboard And Packaging, Inc. Rome Linerboard Mill	Manufacturer	GA	17	0
Innophos Inc	Manufacturer*	TN	13	0
Innophos Inc - Rhodia Geismar Facility	Manufacturer*	LA	5	0
Innovia Films Inc	Manufacturer*	NY	5	0
Ino Therapeutics	Manufacturer*	MA	1	0
Intelicoat Technologies	Manufacturer*	MI	3	0
Interface Solutions Inc	Manufacturer*	OH	1	0
Interfor Pacific - Port Angeles	Manufacturer*	WA	10	0
Interfor Pacific Gilchrist	Manufacturer*	OR	6	0
Interforest Lumber Corp	Manufacturer*	PA	0	0
Interlake Material Handling Inc.	Manufacturer*	IL	1	0
International Fiber Corp	Manufacturer*	PA	4	0
International Flavors & Fragrances	Manufacturer*	NJ	0	0
International Flavors & Fragrances Inc	Manufacturer*	NJ	6	0
International Laboratories Inc	Manufacturer*	FL	7	0
International Metals Reclamation Co Inc Inmetco	Manufacturer*	PA	2	0
International Paper	Manufacturer	NY	1	0
International Paper	Manufacturer	NY	1	0
International Paper - Erie Mill	Manufacturer	PA	1	0
International Paper - Henderson Mill	Manufacturer*	LA	13	0
International Paper - Riverdale Mill	Manufacturer*	AR	21	0
International Paper - Vicksbur G Mill	Manufacturer*	MT	3	0
International Paper / Red River Mill	Manufacturer*	MA	1	0
International Paper Augusta Mill	Manufacturer*	GA	16	0
International Paper Co - Louisiana Mill	Manufacturer*	LA	3	0
International Paper Co - Mansfield Mill	Manufacturer*	LA	1	0
International Paper Co - Savannah Complex	Manufacturer*	GA	11	0
International Paper Co Camden Mill	Manufacturer*	IL	6	0
International Paper Co Natchez	Manufacturer*	MS	6	0
International Paper Co Pineville Mill	Manufacturer*	LA	4	0
International Paper Co.	Manufacturer	SC	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
International Paper Co.	Manufacturer	SC	17	0
International Paper Co./Riverdale Mill	Manufacturer	AL	21	3
International Paper Co/Lock Haven, Pa	Manufacturer	PA	0	0
International Paper Company	Manufacturer*	NC	1	0
International Paper Courtland Mill	Manufacturer*	AL	49	0
International Paper Franklin Mill	Manufacturer*	VA	1	0
International Paper Georgetown Mill	Manufacturer*	SC	4	0
International Paper Hudson River Mills Development	Manufacturer*	NY	1	0
International Paper Mansfield Mill	Manufacturer	LA	1	0
International Paper Pensacola Mill	Manufacturer*	GA	8	0
International Paper Sampit Lumber Mill	Manufacturer*	SC	3	0
International Paper Texarkana Mill	Manufacturer*	UT	3	0
International Paper Vicksburg Mill	Manufacturer	MS	5	0
International Paper-Eastover Mill	Manufacturer*	TN	1	0
International Paper-Georgetown Mill	Manufacturer	SC	3	0
International Paper-Riegelwood Mill	Manufacturer	NC	4	0
International Steel Group	Manufacturer*	SC	4	0
Interpharm Inc	Manufacturer*	NY	3	0
Interplastic Corp	Manufacturer*	OK	3	0
Interplastic Corp - Fort Wright Trd	Manufacturer*	KY	20	0
Interplastic Corporation Blend Plant	Manufacturer*	WA	12	0
Interpolymer Corp	Manufacturer*	KY	15	0
Interstate Chemical Co United Erie	Manufacturer*	PA	1	0
Interstate Hardwoods Llc	Manufacturer*	KY	17	0
Interstate Paper Corporation	Manufacturer*	GA	14	0
Intertape Polymer Group	Manufacturer*	MO	4	0
Intertape Polymer Group Brighton Facility	Manufacturer*	CO	1	0
Intl Specialty Alloys	Manufacturer*	PA	4	0
Invista S.A.R.L. Seaford Plant	Manufacturer*	FL	0	0
Invista Sa Rl	Manufacturer*	TX	3	0
Invista Sa Rl - Waynesboro Facility	Manufacturer*	VA	1	0
Invista Sa Rl - Wilmington	Manufacturer*	NC	2	0
Iowa Ethanol Llc (Dba Poet Biorefining) Hanlontow	Manufacturer*	IA	2	0
Ip Callison & Sons Chehalis	Manufacturer*	WV	13	0
Ipmc Acquisition, L.L.C.	Manufacturer	MI	4	0
Ipmc Inc	Manufacturer*	MI	4	0
Ipsco Koppel Tubulars Corp	Manufacturer*	PA	4	0
Ipsco Steel Incorporated	Manufacturer*	AL	14	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Ipsco Steel-Montpelier Wks Ilap	Manufacturer*	IL	8	0
Ipsco Tubulars (Kentucky) Inc	Manufacturer*	KY	20	0
Ipsco Tubulars Inc.	Manufacturer*	NJ	2	0
Irving Tissue Inc Ft Edward Operations	Manufacturer*	NY	1	0
Irvins Tinwear Co	Manufacturer*	RI	0	0
Isk Magnetics	Manufacturer*	AL	3	0
Islechem Llc	Manufacturer*	NY	3	0
Isochem Colors Inc	Manufacturer*	SC	2	0
Isovolta Us Samica	Manufacturer*	AK	1	0
Isp Chemicals Llc	Manufacturer*	KY	9	0
Isp Technologies Inc	Manufacturer*	TX	4	0
Ispat Inland Inc.	Manufacturer	IN	3	0
Itg-Burlington Finishing Plant	Manufacturer*	NC	1	0
Itw Professional Automotive Products	Manufacturer*	FL	3	0
Itw Spraycore	Manufacturer*	FL	5	0
Ivaco Steel Processing New York Llc	Manufacturer*	OH	3	0
Ivc Industries Inc American Vitamin Products Div	Manufacturer*	NJ	8	0
Ivex Packaging Corp.	Manufacturer*	IL	6	0
Ivex Packaging Paper Llc	Manufacturer*	IL	4	0
J A M Distributing Houston Bulk Plant	Manufacturer*	TX	3	0
J And J Fabricating	Manufacturer*	AL	0	0
J B Sims	Generator	MI	2	0
J C Weadock	Generator	MI	3	0
J H Campbell	Generator	MI	1	0
J K Spruce	Generator	TX	3	0
J M Stuart	Generator	OH	16	0
J R Clancy Inc	Manufacturer*	NY	1	0
J R Simplot Co Pocatello	Manufacturer*	IL	1	0
J R Whiting	Generator	MI	5	0
J T Deely	Generator	TX	3	0
J V Wells Incorporated	Manufacturer*	ME	0	0
J W Aluminum Company	Manufacturer*	TN	3	0
J W Lassiter Lumber Co Inc	Manufacturer*	AL	19	0
J. M. Jones Lumber Co.	Manufacturer*	MS	6	0
J. W. Black Lumber Company	Manufacturer*	AR	5	0
Jack Daniel Distillery Lem Motlow Prop Inc	Manufacturer*	AL	21	0
Jack Mcdonough	Generator	GA	8	0
Jack Watson	Generator	MS	12	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Jackson Paper Manufacturing Company	Manufacturer*	NJ	2	0
Jackson Sawmill Co Inc	Manufacturer*	AL	18	0
James A Fitzpatrick	Generator	NY	1	0
James Alexander Corp	Manufacturer*	NJ	2	0
James De Young	Generator	MI	1	0
James H Miller Jr	Generator	AL	19	0
James Ritter Lumber Co	Manufacturer*	KY	25	0
James River Paper Company Incorporated	Manufacturer*	SD	3	0
James River Power St	Generator	MO	2	0
Janssen Ortho L L C	Manufacturer*	PR	2	2
Janssen Research & Development Llc	Manufacturer*	PA	2	0
Jasper Lumber Co Inc	Manufacturer*	AL	19	0
Javelina Co	Manufacturer*	TX	6	0
Jci Jones Chemicals Inc	Manufacturer*	OH	6	0
Jci Jones Chemicals Incorporated	Manufacturer*	NY	1	0
Jdc Coatings Inc	Manufacturer*	TN	20	0
Jeanerette Sugar Co Inc	Manufacturer	LA	2	0
Jebro Inc	Manufacturer*	IL	5	0
Jefferies	Generator	SC	8	0
Jeffrey Ec	Generator	KS	5	0
Jerry G Williams And Sons Incorporated	Manufacturer*	NC	2	0
Jessop Steel Llc	Manufacturer*	PA	9	0
Jfc Technologies Llc.	Manufacturer*	NJ	9	0
Jim Beam Brands Co	Manufacturer*	KY	5	0
Jim Bridger	Generator	WY	3	0
Jl Prescott Co	Manufacturer*	NJ	2	0
Jm Eagle	Manufacturer*	OR	3	0
Jm Huber Corp	Manufacturer*	TN	12	0
Jmc Steel Group Wheatland Tube Div Council	Manufacturer*	PA	4	0
Joe N Miles & Sons Inc	Manufacturer*	MS	3	0
Johann Haltermann	Manufacturer*	TX	3	0
John E Amos	Generator	WV	2	0
John Maneely Co Wheatland Tube Div - Church St	Manufacturer*	PA	4	0
John Maneely Co Wheatland Tube Div - Mill Street	Manufacturer*	PA	4	0
John P Madgett	Generator	WI	6	0
John Sevier	Generator	TN	22	0
Johns Manville Technical Center	Manufacturer*	CO	2	0
Johnson Matthey	Manufacturer*	NJ	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Johnson Matthey Inc	Manufacturer*	TN	21	0
Johnson Matthey Pharma Services	Manufacturer*	MA	0	0
Johnson Welded Products Inc	Manufacturer*	OH	4	0
Johnsonville	Generator	TN	9	0
Johnstown Specialty Castings Inc	Manufacturer*	PA	1	0
Johnstown Wire Technologies Inc	Manufacturer*	PA	1	0
Joliet 29	Generator	IL	4	0
Joliet 9	Generator	IL	4	0
Jones Chemical	Manufacturer*	FL	6	1
Jones Lumber Company Inc	Manufacturer*	MS	5	0
Joppa Steam	Generator	IL	11	0
Joseph M Farley	Generator	AL	20	0
Jost Chemical Co Inc	Manufacturer*	MS	3	0
Jsw Steel Usa Pipe Coating Division	Manufacturer*	UT	3	0
Jupiter Sulphur Llc	Manufacturer*	NE	1	0
Jw Aluminum	Manufacturer*	TN	4	0
Jw Aluminum - Russellville	Manufacturer*	CO	3	0
Jw Aluminum Co Williamsport Operations	Manufacturer*	PA	0	0
K C Coleman	Generator	KY	13	0
Kabco Inc.	Manufacturer*	NY	3	0
Kahe	Generator	HI	6	0
Kaiser Aluminum	Manufacturer	LA	2	0
Kaiser Aluminum & Chemical Corp	Manufacturer*	GA	4	0
Kaiser Aluminum Fabricated Products	Manufacturer*	WV	5	0
Kammer	Generator	WV	1	0
Kanawha River	Generator	WV	6	0
Kaneka Delaware Corp	Manufacturer*	DE	2	0
Kanthal Palm Coast	Manufacturer*	IL	8	0
Kanzaki Specialty Papers Inc	Manufacturer*	MA	0	0
Kao Specialties Americas Llc	Manufacturer*	NC	1	0
Kapstone Kraft Paper Corp	Manufacturer*	NH	3	0
Kapstone Paper And Packaging	Manufacturer*	SC	3	0
Katahdin Paper	Manufacturer*	ME	1	0
Kaw	Generator	KS	6	0
Kawneer Co Inc	Manufacturer*	AR	4	0
Keener Lumber Co-Johnston	Manufacturer*	NC	2	0
Keener Lumber Company	Manufacturer*	NY	2	0
Keeshan & Bost Chemical Co Inc	Manufacturer*	TX	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Kelstar International Enterprises Inc	Manufacturer*	NJ	2	0
Kelwood Products Inc	Manufacturer*	MS	2	0
Kemira Chemicals Inc	Manufacturer*	WA	13	5
Kemira Pigments, Inc.	Manufacturer	GA	9	0
Kemira Water Solutions	Manufacturer*	WA	5	0
Kemira Water Solutions Inc	Manufacturer*	AL	14	0
Kemira Water Solutions Inc.	Manufacturer*	KS	3	0
Kendall Square	Generator	MA	2	0
Kennametal Northgate Fac	Manufacturer*	SC	4	0
Kenyon Industries	Manufacturer*	RI	3	0
Kern Oil & Refining Co	Manufacturer*	CA	7	0
Kewaunee	Generator	WI	1	0
Keyes Fibre Co.	Manufacturer	WA	10	3
Keyes Fibre Corporation	Manufacturer*	WA	9	0
Keystone	Generator	PA	8	0
Keystone Profiles Ltd Monaca Plt	Manufacturer*	PA	9	0
Keystone Steel & Wire Co	Manufacturer*	IL	6	0
Keystone Steel & Wire Co. - Peoria	Manufacturer	IL	6	0
Kieffer Pulp & Paper Mills Inc	Manufacturer*	KY	8	0
Kik Custom Products	Manufacturer*	IL	11	0
Kilgore Flares Co Llc	Manufacturer*	TN	5	0
Killen Station	Generator	OH	17	0
Kim Berly Mill	Manufacturer*	WI	0	0
Kimberly Clark Corporation	Manufacturer*	SC	7	0
Kimberly-Clark Corp	Manufacturer*	AL	14	0
Kimberly-Clark Corp Loudon Mill	Manufacturer*	TX	27	0
Kimberly-Clark Corp Marinette	Manufacturer*	WI	0	0
Kimberly-Clark Corp Owensboro Operations	Manufacturer*	KY	8	0
Kimberly-Clark Corporation-Munising Mill	Manufacturer	MI	2	0
Kimberly-Clark Pennsylvania L Lc	Manufacturer*	PA	2	0
Kimberly-Clark Tissue Company-Marinette	Manufacturer	WI	0	0
Kimberly-Clark Tissue Mill	Manufacturer*	CT	3	0
Kimberly-Clark Worldwide	Manufacturer*	WA	15	0
Kincaid	Generator	IL	5	0
Kinder Morgan Transmix Co Llc	Manufacturer*	PA	3	0
King	Generator	MN	7	0
King America Finishing Inc	Manufacturer*	GA	7	0
King Industries	Manufacturer*	CT	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
King Pharmaceuticals	Manufacturer*	FL	5	0
Kingston	Generator	TN	23	0
Kinston Neuse Corporation	Manufacturer*	NC	6	0
Kintigh	Generator	NY	1	0
Kirk Arens/Conagra Foods	Manufacturer*	PA	3	0
Kitchens Brothers Manufacturing Co	Manufacturer*	MS	4	0
Kloppenber & Co	Manufacturer*	CO	2	0
Kmco Crosby Plant	Manufacturer*	TX	3	0
Kmtex Ltd	Manufacturer*	TX	3	0
Knowlton Technologies Llc	Manufacturer*	NY	1	0
Knox Lee	Generator	TX	3	0
Knox Mine	Manufacturer*	IN	13	0
Koch Nitrogen Co Llc	Manufacturer*	ID	4	0
Koch Nitrogen Plant	Manufacturer*	NE	2	0
Koch Petroleum Group, L.P.	Manufacturer	TX	3	0
Koppers Follansbee Tar Plant	Manufacturer*	WV	9	0
Korex Chicago Llc	Manufacturer*	IL	4	0
Kpaq Industries Llc - St Francisville Operations	Manufacturer*	LA	3	0
Kraft	Generator	GA	9	0
Kraft Division	Manufacturer	WI	2	0
Kreamer Lumber Mill	Manufacturer*	PA	0	0
Kreisler Industrial Corp	Manufacturer*	NJ	2	0
Krueger & Co	Manufacturer*	IL	4	0
Kugler Oil Co Fertilizer Plant	Manufacturer*	NJ	1	0
Kurt Manufacturing Co.	Manufacturer*	MN	8	0
Kurt Manufacturing Company	Manufacturer*	CO	2	0
Kurz Transfer Products	Manufacturer*	NC	0	0
Kv Pharmaceutical	Manufacturer*	MS	4	0
Kv Pharmaceutical Co	Manufacturer*	MO	4	0
Kv Pharmaceutical Co.	Manufacturer*	MO	4	0
Kwal-Howells Inc (Dba Kwal Paint Inc)	Manufacturer*	CO	1	0
Kyger Creek	Generator	OH	11	0
Kykenkee Inc	Manufacturer*	AL	30	0
Kysor Michigan Fleet	Manufacturer*	NC	1	0
L - 3 Scandia Technologies	Manufacturer*	FL	5	0
L J Hughes & Sons Inc	Manufacturer*	WV	0	0
L Perrigo Company Plant 1	Manufacturer*	MI	1	0
L V Sutton	Generator	NC	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
La France Manufacturing Co.	Manufacturer*	MO	4	0
La Porte The Dow Chemical Co	Manufacturer*	TX	3	0
Labadie	Generator	MO	4	0
Lacygne	Generator	KS	3	0
Lake Catherine	Generator	AR	2	0
Lake Creek	Generator	TX	3	0
Lake Hubbard	Generator	TX	3	0
Lake Road	Generator	MO	3	0
Lake Shore	Generator	OH	1	0
Lakeside Steel Alabama - Thomasville Finishing Work	Manufacturer*	AL	25	0
Lakeside Steel Corporation	Manufacturer*	AR	18	0
Lamart Corp	Manufacturer*	NJ	2	0
Lampe & Malphrus Lumber Co	Manufacturer*	NC	2	0
Land & Sea Forest Prod	Manufacturer*	PA	2	0
Langeloth Metallurgical Co	Manufacturer*	PA	9	0
Lansing	Generator	IA	8	0
Lansing Smith	Generator	FL	10	0
Lanxess Corp	Manufacturer*	NC	1	0
Lanxess Sybron Chemicals Inc.	Manufacturer*	NJ	2	0
Laroche Industries Crystal City Nitrogen	Manufacturer*	MO	3	0
Larsen Memorial	Generator	FL	3	0
Lasalle	Generator	IL	5	0
Latrobe Specialty Steel Co	Manufacturer*	PA	1	0
Lauderdale	Generator	FL	10	0
Lawrence Ec	Generator	KS	6	0
Lawter Inc	Manufacturer*	IA	5	0
Lbc Houston/Bayport Terminal	Manufacturer*	TX	4	0
Lcp Chemicals Ny Division	Manufacturer*	NY	1	0
Le Jones Co	Manufacturer*	MI	1	0
Leaf River Forest Products, Inc.	Manufacturer	MS	3	1
Lebanon Seaboard Corp	Manufacturer*	SC	0	0
Lee	Generator	NC	2	0
Leggett & Platt Wire Mill Br 0400	Manufacturer*	MO	3	0
Lehigh Specialty Melting Inc	Manufacturer*	PA	1	0
Leica Biosystems Richmond Inc	Manufacturer*	IL	3	0
Leigh Products	Manufacturer*	MN	2	0
Leland Olds	Generator	ND	4	0
Leshner Mills	Manufacturer*	AL	20	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Lewcott Corporation	Manufacturer*	MA	0	0
Lewis & Clark	Generator	MT	5	0
Lewis Brothers Lumber Co	Manufacturer*	AL	25	0
Lewis Creek	Generator	TX	3	0
Lewis Lumber & Manufacturing Co Inc	Manufacturer*	AR	3	0
Lexington Fabrics Inc	Manufacturer*	AL	46	0
Lexmark International Inc.	Manufacturer*	LA	11	0
Lg&E Westmoreland Altavista	Generator	VA	2	0
Liberty Carbon Service Inc - Excelsior Springs	Manufacturer*	MO	4	0
Liberty Fibers Corp	Manufacturer*	TN	19	0
Liberty Plastics Inc	Manufacturer*	NJ	7	0
Lieberman	Generator	LA	1	0
Life Technologies Corporation	Manufacturer*	NY	3	0
Lifecore Biomedical Llc	Manufacturer*	MN	6	0
Lifelife Foods	Manufacturer*	MO	3	0
Lilly Del Caribe Inc Carolina	Manufacturer*	PR	2	2
Lilly Del Caribe Pr-Ii - Lilly Del Caribe Pr-Ii	Manufacturer*	RI	2	2
Lilly Technology Center	Manufacturer*	KY	11	0
Lima Refining Co	Manufacturer*	OH	4	0
Limerick	Generator	PA	2	0
Limestone	Generator	TX	3	0
Lincoln Paper And Tissue	Manufacturer*	ME	2	0
Lincolnway Energy Llc	Manufacturer*	IA	1	0
Lindale Manufacturing Inc. C/O Lindale Manufacturing Inc	Manufacturer	GA	16	0
Lindau Chemicals Inc	Manufacturer*	SC	3	0
Linde Gas Llc	Manufacturer*	AR	41	0
Linde Llc	Manufacturer*	IL	6	0
Linden	Generator	NJ	10	0
Linden Lumber Co Ltd	Manufacturer*	AL	18	0
Linden Technology Center	Manufacturer*	NJ	6	0
Lion Oil Co	Manufacturer*	CA	3	0
Little Gypsy	Generator	LA	2	0
Little Rapids Corp - Shawano Specialty Papers	Manufacturer*	WI	2	0
Little River Dry Kilns	Manufacturer*	KY	17	0
Litton Industrial Automation Sys. Inc.	Manufacturer*	PA	0	0
Livingston Pecan & Metal Inc	Manufacturer*	AR	2	0
Lkl Lumber Company Inc	Manufacturer*	AL	19	0
Lnk International Inc	Manufacturer*	NY	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Lnk International Inc.	Manufacturer*	NY	2	0
Lnp Engineering Plastics	Manufacturer*	PA	2	0
Lnva - North Regional Treatment Plant (Part)	Manufacturer*	TX	3	0
Logan Aluminum	Manufacturer*	NC	6	0
Logan Generating Plant	Generator	NJ	7	0
Logansport	Generator	IN	6	0
Lone Star	Generator	TX	3	0
Lone Star Steel Co.	Manufacturer	TX	3	0
Longview Fibre Company	Manufacturer	WA	12	3
Longview Fibre Paper & Packaging Inc	Manufacturer*	WA	12	0
Lonza Group Inc	Manufacturer*	PA	0	0
Lonza Incorporated	Manufacturer*	IL	6	0
Loparex Llc	Manufacturer*	CA	19	0
Lord Saegertown	Manufacturer*	PA	4	0
Lou-Rich Inc	Manufacturer*	MO	1	0
Louis Hornick Co Inc	Manufacturer*	PA	2	0
Louisiana Sugar Refinery (Lsr)	Manufacturer*	LA	4	0
Louisiana -Pacific Deer Lodge Sawmill	Manufacturer*	NC	2	1
Lts Corp Lohmann Therapy Systems @ W Essex Ind Pk	Manufacturer*	NJ	2	0
Ltv Steel - Cleveland Works	Manufacturer	OH	0	0
Ltv Steel Co Inc Indiana Harbor Works	Manufacturer	IN	3	0
Ltv Steel Co., Inc. - Hennepin Works	Manufacturer	IL	6	0
Ltv Steel Company	Manufacturer*	IN	3	0
Ltv Steel Company Counce Plant	Manufacturer*	TX	17	0
Ltv Steel Company-Chicago Coke Plant	Manufacturer	IL	3	0
Lubrizol Advanced Materials	Manufacturer*	NC	1	0
Lubrizol Co	Manufacturer*	NJ	6	0
Lubrizol Corp	Manufacturer*	OH	0	0
Lubrizol Corp Bayport Facility	Manufacturer*	TX	4	0
Lubrizol Corp Deer Park Facility	Manufacturer*	TX	3	0
Lubrizol Corp Painesvil Le Plant	Manufacturer*	OH	1	0
Lucent Technologies Nassau Metals	Manufacturer*	NY	6	0
Luke Paper Co	Manufacturer*	ME	0	0
Lukens Steel Company	Manufacturer	PA	1	0
Lunas Sawmill	Manufacturer*	MO	4	0
Lunday-Thagard Co	Manufacturer*	CA	7	0
Lustar Dyeing And Finishing Incorporated	Manufacturer*	NC	4	0
Luvata Grenada	Manufacturer*	MS	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Lycoming Engines	Manufacturer*	UT	0	0
Lyondell Chem Beaver Valley	Manufacturer*	PA	9	0
Lyondell Chemical Co	Manufacturer*	TX	3	0
Lyondell Chemical Co Bayport Facility (Part)	Manufacturer*	TX	4	0
Lyondellbasell Acetyls Llc	Manufacturer*	TX	3	0
Lyons Falls Pulp & Paper	Manufacturer*	NY	1	0
M & R Industries Markin Tubing Div.	Manufacturer*	OH	0	0
M C Dixon Lumber Co	Manufacturer*	AL	17	0
M L Hibbard	Generator	MN	1	0
M L Kapp	Generator	IA	8	0
M-I Llc	Manufacturer*	LA	2	0
M&G Polymers Usa Llc	Manufacturer*	WV	5	0
M2green Redevelopment	Manufacturer*	NC	2	0
Macallen Chemical Inc.	Manufacturer*	LA	3	0
Macdermid Inc	Manufacturer*	DE	2	0
Mackenzie Co Llc	Manufacturer*	LA	4	0
Mackeys Ferry Sawmill - Roper	Manufacturer*	NC	6	0
Mactac Scranton Plt	Manufacturer*	PA	0	0
Maczuk - Brunswick	Manufacturer*	MO	4	0
Madison Paper Industries	Manufacturer	ME	2	0
Magnablend Central Facility	Manufacturer*	UT	3	0
Magnesium Elektron Inc	Manufacturer*	NJ	2	0
Maine Energy Recovery Co	Generator	ME	7	0
Majestic Metals Incorporated	Manufacturer*	CO	2	0
Mallard Creek Polymers	Manufacturer*	NC	1	0
Mallinckrodt Inc	Manufacturer*	IL	2	0
Mallinckrodt Llc	Manufacturer*	NC	2	0
Manatee	Generator	FL	2	0
Manchester Street	Generator	RI	9	0
Manchester Tank & Equipment	Manufacturer*	IL	8	0
Mandalay	Generator	CA	14	1
Mandan Refinery	Manufacturer	ND	5	0
Manildra Milling Co	Manufacturer*	IA	3	0
Manistique Papers Inc	Manufacturer*	MI	1	0
Manitowoc	Generator	WI	1	0
Manke Lumber Co Inc Tacoma Saw Mill	Manufacturer*	WA	14	2
Mannkind Corporation	Manufacturer*	CT	3	0
Maple River Energy Llc	Manufacturer*	IA	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Marathon Ashland Petroleum Llc	Manufacturer	LA	2	0
Marathon Ashland Petroleum, Llc	Manufacturer	IL	17	0
Marathon Petroleum Co Lp	Manufacturer*	LA	2	0
Marathon Petroleum Co Lp Illinois Refining Div	Manufacturer*	IL	17	0
Marathon Petroleum Co Lp Ohio Refining Div	Manufacturer*	OH	6	0
Marietta American Corp	Manufacturer*	MS	3	0
Marietta Holding Corp DbA Central Avenue Propertie	Manufacturer*	OH	0	0
Marietta Wood Supply Inc	Manufacturer*	MT	14	0
Marion	Generator	IL	2	0
Marion Mouldings	Manufacturer*	AR	20	0
Maritime International Inc	Manufacturer*	MA	2	0
Mark Vii Equipment Incorporated	Manufacturer*	CO	2	0
Mars Petcare Us Inc.	Manufacturer*	PA	1	0
Marshall	Generator	NC	1	0
Martin	Generator	FL	5	0
Martin Color-Fi Incorporated	Manufacturer*	SC	3	0
Martin Lake	Generator	TX	3	0
Martin Mills Incorporated	Manufacturer*	LA	3	0
Martin Operating Partnership Lp	Manufacturer*	IL	5	0
Martin Operating Ptnr Lp	Manufacturer*	UT	3	0
Martins Creek	Generator	PA	2	0
Matco Tools	Manufacturer*	NY	3	0
Matcor Metal Fabrication	Manufacturer*	IL	2	0
Materials Technology Inc.	Manufacturer*	NJ	0	0
Materion Brush Inc	Manufacturer*	OK	3	0
Materion Technical Materials Inc	Manufacturer*	RI	4	0
Matheson Tri-Gas Inc.	Manufacturer*	IN	4	0
Matheson Trigas Longmont Co Branch	Manufacturer*	CO	2	0
Matson Lumber Jefferson	Manufacturer*	PA	8	0
Mattituck Services	Manufacturer*	OH	3	0
Maverick C&P Inc Cedar Springs Georgia	Manufacturer*	IL	19	7
Maverick Tube Llc DbA Tenarisconroe	Manufacturer*	AL	3	0
Maverick Tube Lp Blythev L	Manufacturer*	AR	3	0
Mayo	Generator	NC	1	0
Mayr Bros Lumber Hoquiam Site	Manufacturer*	WA	12	0
Mcadoo & Allen Div Quaker Color Div Mcadoo & Alle	Manufacturer*	PA	2	0
Mcclain Ez Pack Inc Alabama Div	Manufacturer*	AL	18	0
McClellan	Generator	AR	7	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Mccormick Distilling Co Inc	Manufacturer*	PR	3	0
Mcdowell Lumber Co	Manufacturer*	NC	1	0
Mcgill Inc	Manufacturer*	IL	3	0
Mcguire	Generator	NC	1	0
Mcintosh	Generator	GA	9	0
Mckinney Lumber Inc	Manufacturer*	AL	46	0
Mclaughlin Body Co	Manufacturer*	IL	8	0
Mclouth Steel Gibraltar Plant	Manufacturer*	NC	4	0
Mcmanus	Generator	GA	14	0
Mcmeekin	Generator	SC	2	0
Mcneil Healthcare Llc	Manufacturer*	PR	2	2
Mcneil Ppc	Manufacturer*	PA	3	0
Mcneil Ppc Inc	Manufacturer*	NJ	2	0
Meshan Lumber Co Inc	Manufacturer*	AL	25	0
Meshares Inc Viobin Usa Div	Manufacturer*	IL	5	0
Mcwhorter Technologies	Manufacturer*	IL	2	0
Mcwilliams	Generator	AL	17	0
Mead Coated Board, Inc.	Manufacturer	AL	18	0
Mead Johnson Nutritional	Manufacturer*	IN	13	0
Mead-Fine Paper Division	Manufacturer	OH	3	0
Meadwestvaco Custom Papers Laurel Mill	Manufacturer*	MA	3	0
Meadwestvaco Of Virginia Covington Operations	Manufacturer*	VA	2	0
Meadwestvaco Texas	Manufacturer*	TX	3	0
Meadwestvaco Virginia Corp - Wickliffe Carbon Plan	Manufacturer*	KY	8	0
Mecklenburg Cogeneration Facility	Generator	VA	2	0
Medi-Physics Inc	Manufacturer*	NJ	0	0
Memphis Biofuels Llc	Manufacturer*	TN	5	0
Menasha	Generator	WI	0	0
Menominee Acquisition Corp DbA Clearwater Paper -	Manufacturer*	MI	0	0
Meramec	Generator	MO	5	0
Mercer	Generator	NJ	7	0
Merck & Co Inc	Manufacturer*	IA	10	0
Merck & Co., Inc.-Cherokee Plant	Manufacturer	PA	0	0
Merck Animal Health	Manufacturer*	NJ	5	0
Merck Pharm Mfg Lancaster	Manufacturer*	PA	3	0
Merck Sharp & Dohme Corp	Manufacturer*	NJ	6	0
Merial Limited Missouri R	Manufacturer*	NC	5	0
Meridian Automotive Systems Angola Op	Manufacturer*	MI	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Meridian Rail	Manufacturer*	AL	23	0
Meridien Hardwoods Of Pa	Manufacturer*	PA	3	0
Merisol Antioxidants Llc	Manufacturer*	PA	4	0
Merisol Usa Llc	Manufacturer*	TX	3	0
Merit Steel Co	Manufacturer*	IN	7	0
Merom	Generator	IN	17	0
Merrimack	Generator	NH	5	0
Mesa Oil	Manufacturer*	CO	2	0
Metal Matic	Manufacturer*	IN	4	0
Metal-Matic Inc	Manufacturer*	MO	8	0
Metaldyne	Manufacturer*	IL	2	0
Metallurgical Products Co	Manufacturer*	PA	2	0
Metals Testing Co	Manufacturer*	CT	5	0
Metem Corp	Manufacturer*	NJ	2	0
Metro Scrap Metals	Manufacturer*	AR	2	0
Metrock Steel & Wire Co.	Manufacturer*	AR	30	0
Metton America Inc	Manufacturer*	TX	3	0
Metuchen I Corp	Manufacturer*	NJ	0	0
Mexichem Fluor Inc	Manufacturer*	LA	5	0
Mf&H Textiles Inc	Manufacturer*	MA	10	0
Mfa Agri Service - Gallatin	Manufacturer*	MO	3	0
Mfa Agri Service - Mexico	Manufacturer*	MO	1	0
Mfa Agri Service - Sheridan	Manufacturer*	MO	2	0
Mfa Agri Service - Thompson	Manufacturer*	MS	1	0
Mfa Bulk Fertilizer Plant - Wentzville	Manufacturer*	MS	5	0
Mfa Incorporated	Manufacturer*	MT	1	0
Mg Industries - West Lake	Manufacturer*	LA	1	0
Mh Tech Paper Prod Mfg	Manufacturer*	PA	0	0
Miami Fort	Generator	OH	19	0
Michael Washington	Manufacturer*	NY	6	0
Michigan City	Generator	IN	3	0
Michigan Paperboard And Michigan Carton	Manufacturer*	MN	1	0
Michigan Seamless Tube Llc	Manufacturer*	MN	4	0
Michigan Sugar Co	Manufacturer*	MI	3	0
Michigan Sugar Co - Caro Factory	Manufacturer*	MI	1	0
Michigan Sugar Co - Croswell Factory	Manufacturer*	MI	4	0
Michoud	Generator	LA	10	0
Microfibres Inc	Manufacturer*	NC	0	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Mid South Lumber Inc.	Manufacturer*	MS	2	0
Mid-America Distillations Inc	Manufacturer*	AR	2	0
Mid-West Mfg Llc	Manufacturer*	IL	2	0
Middletown	Generator	CT	5	0
Midland Cogeneration Venture	Generator	MI	2	0
Midstate Mills Inc.	Manufacturer*	NC	0	0
Midstates Wire	Manufacturer*	IN	4	0
Miles Bogalusa Mill	Manufacturer*	LA	4	0
Mill Creek	Generator	KY	15	0
Millennium Inorganic Chemicals	Manufacturer*	MD	3	0
Millennium Inorganic Chemicals A Cristal Co	Manufacturer*	PA	0	0
Millennium Inorganic Chemicals St Helena Plant	Manufacturer*	MS	3	0
Miller & Company	Manufacturer*	AL	21	0
Miller And Co Plant No 2	Manufacturer*	AL	14	0
Miller Springs Remediation Mgmt - Glenn Springs Ho	Manufacturer*	WY	8	0
Milliken	Generator	NY	1	0
Milliken & Co Enterprise Plant	Manufacturer*	SC	2	0
Milliken & Co Elm City Plant	Manufacturer*	GA	8	0
Milliken & Co Magnolia Finishing Plant	Manufacturer*	SC	1	0
Milliken Chemical - Dewey Plant	Manufacturer*	SC	1	0
Millport Wood Products	Manufacturer*	AL	20	0
Millstone	Generator	CT	6	0
Milton R Young	Generator	ND	5	0
Mine Safety Appliances Co Evans City Operations	Manufacturer*	PA	2	0
Minn-Dak Farmers Cooperative	Manufacturer*	ND	1	0
Minova Usa Inc	Manufacturer*	CT	6	2
Minute Man Anchor Incorporated	Manufacturer*	NC	4	0
Mirant Birchwood Power Facility	Generator	VA	3	0
Mississippi Phosphates Corp	Manufacturer*	NC	10	0
Missouri Chemical Works	Manufacturer*	MO	8	0
Missouri City	Generator	MO	4	0
Missouri Hardwood Flooring	Manufacturer*	MO	3	0
Missouri Pacific Lumber Company	Manufacturer*	MO	5	0
Mistersky	Generator	MI	4	0
Mitchell	Generator	GA	12	7
Mitchell	Generator	GA	4	7
Mitchell	Generator	GA	2	7
Mitsubishi Polyester Film L L C	Manufacturer*	SC	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Mobil Chemical Co Beaumont Polyethylene Plant	Manufacturer*	TX	3	0
Mobile Paperboard Corp	Manufacturer*	AR	14	0
Mobile Pulley And Machine Works	Manufacturer*	AL	16	0
Mocaro Dyeing & Finishing Company	Manufacturer*	NC	0	0
Modern Equipment Co	Manufacturer*	NE	5	0
Modern Welding Co Inc	Manufacturer*	KY	17	0
Mohawk Paper Mills Inc	Manufacturer*	PA	0	0
Mohawk Paper Mills, Inc.	Manufacturer	NY	0	0
Molecu Wire Corp	Manufacturer*	NY	0	0
Momentive Specialty Chemicals Alexandria Plant	Manufacturer*	LA	2	0
Momentive Specialty Chemicals Inc	Manufacturer*	LA	4	0
Momentive Specialty Chemicals Inc - Moreau Facilit	Manufacturer*	NY	1	0
Momentive Specialty Chemicals Inc - Sheboygan Site	Manufacturer*	WI	1	0
Momentive Specialty Chemicals Inc Hope	Manufacturer*	AR	2	0
Mona Industries Inc.	Manufacturer*	NY	2	0
Monadnock Paper Mills	Manufacturer*	NH	0	0
Monahans Filaments Llc East	Manufacturer*	AK	1	0
Monarch Chemicals	Manufacturer*	OH	0	0
Monroe	Generator	MI	4	0
Monsanto Chocolate Bayou	Manufacturer*	TX	4	0
Mont Belvieu Plastics Plant	Manufacturer*	TX	3	0
Montana Refining Petroleum Refinery	Manufacturer*	MT	3	0
Montana Sulphur & Chemical Co	Manufacturer*	MT	1	0
Montco Research Products Inc	Manufacturer*	FL	6	0
Montebello Packaging	Manufacturer*	KY	5	0
Monticello	Generator	MN	0	0
Monticello	Generator	MN	3	0
Montour	Generator	PA	0	0
Montrose	Generator	MO	3	0
Montville	Generator	CT	7	0
Morflex Chemical Co Inc	Manufacturer*	NC	1	0
Morgan Creek	Generator	TX	3	0
Morgantown	Generator	MD	8	0
Morgantown Energy Facility	Generator	WV	0	0
Morro Bay	Generator	CA	14	2
Morton Industries Llc	Manufacturer*	IL	2	0
Morton International Inc (Db a Shipley Co)	Manufacturer*	NC	5	0
Morton International Incorporated	Manufacturer*	SC	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Morton International Morton Salt Div	Manufacturer*	LA	2	0
Morton Salt	Manufacturer*	NY	0	0
Morton Salt Inc	Manufacturer*	OH	6	0
Mosaic Fertilizer Llc	Manufacturer*	FL	5	0
Mosaic Fertilizer Llc - Bartow	Manufacturer*	FL	4	0
Mosaic Fertilizer Llc - New Wales Plant	Manufacturer*	FL	4	0
Mosaic Fertilizer Llc - Riverview	Manufacturer*	FL	4	0
Mosaic Fertilizer Llc - South Pierce Plant	Manufacturer*	FL	4	0
Mosaic Fertilizer Llc Green Bay Plant	Manufacturer*	FL	4	0
Mosaic Fertilizer Llc Uncle Sam Plant	Manufacturer*	LA	4	0
Mosaic Phosphates Co Faustina Plant	Manufacturer*	LA	3	0
Moss Landing	Generator	CA	9	2
Moss Lumber Industries Inc	Manufacturer*	AL	34	0
Most Inc	Manufacturer*	MO	1	0
Motiva Enterprises Convent Refinery	Manufacturer*	LA	4	0
Motiva Enterprises Llc	Manufacturer	LA	2	0
Motiva Enterprises Llc Norco Refinery	Manufacturer	LA	4	0
Motiva Enterprises Llc-Delaware City Refinery	Manufacturer	DE	7	0
Mound Bayou Refinery Inc	Manufacturer*	NJ	5	0
Mount Tom	Generator	MA	3	0
Mountain Creek	Generator	TX	3	0
Mountaineer (1301)	Generator	WV	11	0
Mpm Silicones Llc	Manufacturer*	WV	8	0
Mt Storm	Generator	WV	0	0
Mud Lakes	Manufacturer*	AR	14	0
Mueller Brothers Timber Incorporated	Manufacturer*	MO	1	0
Mulberry Phosphates Inc	Manufacturer*	FL	4	0
Multi-Pack Solutions	Manufacturer*	IN	4	0
Multi-Plastics Extrusions Inc	Manufacturer*	PA	2	0
Munters Corp	Manufacturer*	GA	7	0
Murphy Oil Superior Refinery	Manufacturer*	WV	1	0
Murphy Oil Usa, Inc. Meraux Refinery	Manufacturer	LA	4	0
Muscatine Plant #1	Generator	IA	8	0
Muskingum River	Generator	OH	8	0
Muskogee	Generator	OK	4	0
Mustang	Generator	OK	3	0
Mylan Pharmaceuticals Inc	Manufacturer*	CA	0	0
Mystic	Generator	MA	7	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Na Industries Inc	Manufacturer*	TN	27	0
Nacco Materials Handling Group Incorporated	Manufacturer*	NC	4	0
Nalco Chemical Co @ Mid Atlantic Ind Pk	Manufacturer*	NJ	2	0
Nalco Co	Manufacturer*	TX	5	0
Nalco Co - Evansville Plant 108	Manufacturer*	AL	2	0
Nalco Co Plant 106	Manufacturer*	TX	5	0
Nan Ya Plastics Corporation America South Carolina	Manufacturer*	SC	2	0
Nanochem Solutions Inc	Manufacturer*	IL	6	0
Nanophase Technologies Corp	Manufacturer*	IL	4	0
National Metalwares L.P.	Manufacturer*	IL	3	0
National Processing Company Plant Iii-Pickle Line	Manufacturer*	IN	3	0
National Refractories & Minerals Corp	Manufacturer*	CO	5	2
National Standard Niles City Complex	Manufacturer*	MO	4	0
National Starch	Manufacturer*	IN	11	0
National Starch & Chemical	Manufacturer*	MN	1	0
National Starch & Chemical Cor	Manufacturer*	TX	27	0
Natl Cooperative Refinery	Manufacturer*	KY	2	0
Natural Advantage	Manufacturer*	LA	1	0
Natural Gas Odorizing Inc.	Manufacturer*	TX	3	0
Naughton	Generator	WY	7	0
Navajo	Generator	AZ	7	0
Navajo Refining Co	Manufacturer*	NM	10	0
Nbty Inc	Manufacturer*	OH	3	0
Nc Dept Of Public Safety	Manufacturer*	NE	3	0
Neal North	Generator	IA	5	0
Neal South	Generator	IA	5	0
Nearman Creek	Generator	KS	3	0
Nease Corp	Manufacturer*	OH	1	0
Neblock Inc	Manufacturer*	IL	6	0
Nebraska City	Generator	NE	4	0
Neenah Paper Fr Llc	Manufacturer*	MA	3	0
Neenah Paper Inc - Whiting Mill	Manufacturer*	WI	2	0
Neenah Paper Inc Neenah Mill	Manufacturer*	WI	0	0
Neenah Paper Michigan Inc	Manufacturer*	MI	2	0
Nekoosa Papers Inc., A Wholly Owned Subsidiary Of Georgia-Pacific Corp.	Manufacturer	WI	2	0
Nekoosa Papers Inc., A Wholly Owned Subsidiary Of Georgia-Pacific Corp.	Manufacturer	WI	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Nelson Brothers Llc Parrish	Manufacturer*	AL	19	0
Nelson Dewey	Generator	WI	6	0
Neosho	Generator	KS	3	0
Neville Chemical Co	Manufacturer*	PA	9	0
New Boston Coke - American Buckeye Division	Manufacturer	OH	6	0
New Brunswick Plating Inc	Manufacturer*	NJ	0	0
New Castle	Generator	PA	1	0
New Haven Harbor	Generator	CT	6	0
New Madrid	Generator	MO	7	0
New Orleans Ironworks Inc	Manufacturer*	LA	3	0
New Page Paper Mill & Cogen Facility	Manufacturer*	ME	1	0
New South Inc--Pond Well	Manufacturer*	NC	1	0
New South Lumber & Wood Preserving Cos Camden Plan	Manufacturer*	SC	1	0
New York Wire - Wire Facility	Manufacturer*	PA	3	0
Newark Boxboard Co	Manufacturer*	NY	2	0
Newington	Generator	NH	9	0
Newstech Ny Inc.	Manufacturer*	NY	1	0
Newton	Generator	IL	6	0
Newton Falls Fine Paper Co Llc	Manufacturer*	NY	1	0
Nexen Chemical Usa	Manufacturer*	LA	3	0
Ngc Industries Inc	Manufacturer*	NJ	2	0
Niagara Lasalle Corp - South Holland	Manufacturer*	IL	2	0
Niagara Mill	Manufacturer*	WV	0	0
Nichols Aluminum	Manufacturer*	IN	4	0
Nichols Aluminum Alabama Inc	Manufacturer*	AR	41	0
Nicolaus Paper Inc.	Manufacturer	LA	3	0
Niles	Generator	OH	1	0
Nine Mile Point	Generator	NY	1	0
Ninemile Point	Generator	LA	4	0
Nippon Paper Industries Usa Co Ltd	Manufacturer*	WI	9	1
Nisseki Chemical Texas Inc Bayport Plant	Manufacturer*	TX	4	0
Nitram Inc	Manufacturer*	FL	5	0
Nlmc Indiana	Manufacturer*	IN	3	0
Nlmc Pennsylvania Corp	Manufacturer*	PA	4	0
Noblesville	Generator	IN	11	0
Noland Lumber Company	Manufacturer*	AL	25	0
Noltex Llc	Manufacturer*	TX	3	0
Norac Inc	Manufacturer*	AR	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Noranda Alumina Llc	Manufacturer*	LA	4	0
Noranda Aluminum Inc	Manufacturer*	MT	4	0
Norandal Usa Inc	Manufacturer*	AR	5	0
Norit Americas Inc	Manufacturer*	TX	3	0
Norris Cylinder Co	Manufacturer*	AL	41	0
North American Hoganas	Manufacturer*	PA	1	0
North American Pipe Corp	Manufacturer*	KY	9	0
North American Stainless - Ghent	Manufacturer	KY	19	0
North Anna	Generator	VA	2	0
North Metal & Chemical Co	Manufacturer*	PA	3	0
North Mobile Co Industrial Park	Manufacturer*	FL	14	0
North Omaha	Generator	NE	5	0
North Star Bluescope Steel Llc	Manufacturer*	OH	3	0
North Texas	Generator	TX	3	0
Northeast Missouri Grain Llc	Manufacturer*	MS	1	0
Northhampton Generating Co Lp	Generator	PA	2	0
Northport	Generator	NY	7	0
Northshore Mining - Silver Bay	Manufacturer*	MN	1	0
Northshore Mining Co - Babbitt	Manufacturer*	PA	1	0
Northside Generating	Generator	FL	11	1
Northtec Bristol	Manufacturer*	PA	2	0
Northwest Aluminum	Manufacturer	OR	9	3
Northwest Aluminum Co	Manufacturer*	PA	9	3
Northwest Etch	Manufacturer*	WA	13	0
Northwest Missouri Biofuels Llc	Manufacturer*	MO	3	0
Northwest Pipe Co	Manufacturer*	FL	1	0
Northwestern Steel And Wire Co.	Manufacturer	IL	6	0
Norwalk Harbor	Generator	CT	8	0
Novartis Consumer Health Incorporated	Manufacturer*	NE	4	0
Novartis Pharmaceuticals Corp Eastway Station	Manufacturer*	NJ	2	0
Novartis Pharmaceuticals Corporation	Manufacturer*	NY	2	0
Novartis Vaccines & Diagnostics	Manufacturer*	NE	1	0
Novelis Corp	Manufacturer*	KY	11	0
Novelis Corp - Greensboro	Manufacturer*	GA	5	0
Novo Nordisk Pharmaceuticals Industries Inc	Manufacturer*	NC	2	0
Novolyte Performance Materials	Manufacturer*	LA	3	0
Novozymes North America Inc	Manufacturer*	NC	3	0
Novus Fine Chemicals	Manufacturer*	NJ	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Npdes Stormwater Par224853	Manufacturer*	PA	0	0
Nu-West Industries Inc	Manufacturer*	ID	2	0
Nuair Filter Co Llc	Manufacturer*	IL	5	0
Nucla	Generator	CO	6	0
Nuclear Fuel Services Inc	Manufacturer*	TN	19	0
Nucor Lmp	Manufacturer*	MO	2	0
Nucor Steel	Manufacturer*	IN	4	0
Nucor Steel - Arkansas	Manufacturer*	AR	3	0
Nucor Steel A Div Of Nucor Corp (Part)	Manufacturer*	VA	2	0
Nucor Steel Auburn Inc	Manufacturer*	NY	1	0
Nucor Steel Birmingham Inc	Manufacturer *	AL	21	0
Nucor Steel Darlington	Manufacturer*	TN	3	0
Nucor Steel Decatur Llc	Manufacturer*	AL	41	0
Nucor Steel Hertford County	Manufacturer*	NE	1	0
Nucor Steel Jackson Inc	Manufacturer*	NC	4	0
Nucor Steel Marion Inc	Manufacturer*	OH	10	0
Nucor Steel Memphis Inc	Manufacturer*	TN	5	0
Nucor Steel Nebraska	Manufacturer*	NJ	2	0
Nucor Steel Seattle	Manufacturer*	WI	12	1
Nucor Steel Tuscaloosa Inc	Manufacturer*	AR	23	0
Nucor Steel-Berkeley	Manufacturer*	SC	3	0
Nucor-Yamato Steel Co	Manufacturer*	AR	6	0
Nueces Bay	Generator	TX	10	0
Nustar Asphalt Refining Llc	Manufacturer*	GA	11	0
Nylon Corp Of America	Manufacturer*	NJ	5	0
Nyrstar Clarksville Inc	Manufacturer*	TX	19	0
O H Hutchings	Generator	OH	1	0
O W Sommers	Generator	TX	3	0
Oak-Bark Corp	Manufa cturer*	NC	8	0
Oakman Hardwood Inc	Manufacturer*	AL	19	0
Obi Linings Incorporated	Manufacturer*	NC	4	0
Occidental Chemical Corp	Manufacturer	LA	2	0
Occidental Chemical Corp	Manufacturer	LA	46	0
Occidental Chemical Corp Geismar Plant	Manufacturer*	LA	4	0
Occidental Chemical Corp Niagara Plant	Manufacturer*	NY	3	0
Occidental Chemical Corp Niagra Plt	Manufacturer	NY	3	0
Occidental Chemical Corp.	Manufacturer	TX	8	0
Occidental Chemical Corporation	Manufacturer*	TX	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Oci Chemical Corp Decatur Plt	Manufacturer*	AR	41	0
Oconee	Generator	SC	1	0
Octagon Process Inc	Manufacturer*	NJ	2	0
Ocel America Inc C-O Dupont Chamberwork	Manufacturer*	NJ	7	0
Ohio Coatings Co	Manufacturer*	OH	2	0
Ohio Cold Rolling Company Llc	Manufacturer*	OR	2	0
Ohio Paperboard Corp	Manufacturer*	OH	10	0
Ohio Valley Aluminum Co Inc	Manufacturer*	KY	10	0
Ohm Labs Inc	Manufacturer*	NJ	0	0
Okeelanta Corp	Manufacturer*	GA	6	0
Oklaunion	Generator	TX	3	0
Old Monroe Elevator & Supply	Manufacturer*	MO	1	0
Old Town Fuel And Fiber	Manufacturer*	ME	2	0
Olin Corp	Manufacturer*	IL	4	0
Olin Corp Charleston Plant	Manufacturer*	TX	12	0
Olin Corporation	Manufacturer*	NJ	2	0
Olympia Lumber & Post	Manufacturer*	KY	20	0
Olympic Chemical Corporation	Manufacturer*	WA	14	1
Omega Chemicals Inc	Manufacturer*	SC	1	0
Omg Amer Johnstown Plt	Manufacturer*	PA	1	0
Omg Americas	Manufacturer*	PA	4	0
Omni Chemical Corp	Manufacturer*	NJ	2	0
Omnova Solutions Inc	Manufacturer*	OH	0	0
Onyx Specialty Papers Inc - Willow Mill	Manufacturer*	MA	3	0
Oracle Flexible Packaging Plant 200	Manufacturer*	NJ	0	0
Organic Technologies	Manufacturer*	OH	12	0
Organon Inc	Manufacturer*	NJ	6	0
Orica Usa Inc Morris Il	Manufacturer*	IL	5	0
Ormet Aluminum Mill Products Corporation	Manufacturer	OH	8	0
Ormet Primary Aluminum Corp	Manufacturer*	TX	4	0
Ormond Beach	Generator	CA	11	1
Ortho Mcneil Janssen Pharmaceuticals Inc	Manufacturer*	NJ	2	0
Ortho-Clinical Diagnostics	Manufacturer*	NY	0	0
Ortho-Mcneil Pharmaceutical Corp	Manufacturer*	NJ	0	0
Osg Norwich Pharmaceutic als Inc	Manufacturer*	NY	0	0
Osmose Inc	Manufacturer*	MN	1	0
Oswego	Generator	NY	1	0
Oswego County Energy Recovery	Generator	NY	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Otsego Paper Inc	Manufacturer*	MI	1	0
Otter Creek Ethanol Llc	Manufacturer*	IA	3	0
Ottumwa	Generator	IA	7	0
Outokumpu Stainless Pipe Inc	Manufacturer*	GA	3	0
Owensboro Grain Edible Oils Incorporated	Manufacturer*	KY	13	0
Owensboro Specialty Polymers Inc	Manufacturer*	KY	13	0
Owl's Head Alloys Inc	Manufacturer*	MO	10	0
Ox Paperboard Llc	Manufacturer*	AL	0	0
Oxford Textile Facility	Manufacturer*	NJ	2	0
Oxid Lp	Manufacturer*	TX	3	0
Oxy Vinyls Lp	Manufacturer*	NJ	7	0
Oxy Vinyls Lp Battleground Ca	Manufacturer*	WI	3	0
Oxy Vinyls Lp Deer Park Caustic	Manufacturer*	TX	3	0
Oxy Vinyls Lp Houston Operations Pasadena Pvc Plan	Manufacturer*	TX	3	0
Oxy Vinyls Lp La Porte Vcm Plant	Manufacturer*	TX	3	0
Oxy Vinyls Lp Louisville	Manufacturer*	KY	15	0
Ozark Mountain Hardwood	Manufacturer*	MO	8	0
P Chem Inc	Manufacturer*	UT	3	0
P H Glatfelter Co - Spring Grove Mill	Manufacturer*	SC	3	0
P L Bartow	Generator	FL	10	0
P. H. Glatfelter Company	Manufacturer	PA	3	0
P.H. Glatfelter Chillicothe Facility	Manufacturer*	OH	11	0
P4 Production Llc	Manufacturer*	IL	6	0
Pa Gellner & Co. L.L.C.	Manufacturer*	PA	2	0
Pacific Edge Industries	Manufacturer*	WA	14	0
Packaging Corp Of America	Manufacturer*	MI	1	0
Packaging Corp. Of America	Manufacturer*	GA	5	0
Packaging Corporation Of America-Tomahawk	Manufacturer*	WV	2	0
Pactiv Corp	Manufacturer*	OH	1	0
Paddy Mountain Lumber Co Incorporated	Manufacturer*	NC	0	0
Pageland Screen Printers Inc	Manufacturer*	SC	3	0
Palatka Operations C/O Georgia-Pacific Corp	Manufacturer	FL	6	0
Palisades	Generator	MI	2	0
Pall Corporation Fluid Dynamics Division	Manufacturer*	FL	6	0
Pallflex Division Of Pall Corp	Manufacturer*	FL	0	0
Palmer Intl Inc	Manufacturer*	PA	2	0
Pandrol Usa @ Pureland Ind Complex	Manufacturer*	NJ	2	0
Paneltech Products Inc	Manufacturer*	WI	12	1

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Paperworks Industries Inc	Manufacturer*	IN	10	0
Par Pharmaceutical Inc	Manufacturer*	NY	2	0
Paradise	Generator	KY	6	0
Paramount Petroleum Bakersfield Refinery Areas 1 &	Manufacturer*	CA	7	0
Paramount Petroleum Corp	Manufacturer*	CA	7	0
Parish Chemical Co	Manufacturer*	VA	3	0
Parke Davis & Co	Manufacturer	MI	1	0
Parker Hannifin Corp	Manufacturer*	NY	1	0
Parker Technology Llc	Manufacturer*	LA	2	0
Parsons Co Inc	Manufacturer*	IL	2	0
Parton Lumber Company Incorporated	Manufacturer*	NC	0	0
Pasadena Refining System Inc	Manufacturer*	TX	3	0
Pate Lumber Company Inc	Manufacturer*	AL	25	0
Paulsboro Asphalt Refinery	Manufacturer*	NJ	2	0
Paulsboro Packaging Inc	Manufacturer*	NJ	2	0
Paulsboro Refining Co Llc	Manufacturer*	NJ	2	0
Pax Company	Manufacturer*	VA	3	0
Pbs Lumber Manufacturing Llc	Manufacturer*	LA	1	0
Pcc Airfoils Llc - Minerva	Manufacturer*	OH	6	0
Pccr Usa	Manufacturer*	CA	7	0
Pccr Usa Inc	Manufacturer*	IL	3	0
Pci Synthesis Inc	Manufacturer*	MD	3	0
Pcs Nitrogen Fertilizer	Manufacturer*	IA	7	0
Pcs Nitrogen Fertilizer Lp	Manufacturer*	LA	5	0
Pcs Phosphate Co Inc	Manufacturer*	NJ	3	0
Pcs Phosphate Joplin	Manufacturer*	MO	3	0
Pcs Phosphate White Springs	Manufacturer*	FL	4	0
Pcs Purified Phosphates	Manufacturer*	OH	1	0
Pd Glycol	Manufacturer*	TX	3	0
Pdk Laboratories Inc.	Manufacturer*	NY	2	0
Peach Bottom	Generator	PA	3	0
Peak Asphalt Llc - Cowboy Asphalt Terminal	Manufacturer*	VA	3	0
Peak Sulfur Inc	Manufacturer*	AL	2	0
Pearl Plant	Manufacturer*	OH	2	0
Pearl Station	Generator	IL	5	0
Pearson Lumber Company	Manufacturer*	AL	20	0
Pelican Refining Co Llc	Manufacturer*	LA	1	0
Pelron Inc	Manufacturer*	IL	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Pemco Corp	Manufacturer*	MD	3	0
Penetone Corp	Manufacturer*	NJ	2	0
Penn Carbose Inc	Manufacturer*	PA	1	0
Penn Mag Adrian Ore Plt	Manufacturer*	KS	8	0
Penn Specialty Chemical	Manufacturer*	TN	5	0
Penn State Special Metals Llc	Manufacturer*	TN	4	0
Pennex Aluminum Co	Manufacturer*	PA	3	0
Pennex Lab	Manufacturer*	PA	3	0
Pennzoil-Quaker State Company Rouseville Refinery	Manufacturer	PA	2	0
Penray Cos Inc	Manufacturer*	IL	4	0
Pentair Pool Products Incorporated	Manufacturer*	NC	1	0
Performance Fibers Inc	Manufacturer*	NC	1	0
Performance Fibers Operations Inc Salisbury Plant	Manufacturer*	NC	0	0
Performance Fibers Scottsboro Inc	Manufacturer*	DE	34	0
Permalite Repro Media Corp.	Manufacturer*	CO	11	0
Perrigo Holland Inc	Manufacturer*	MO	1	0
Perrigo Ny	Manufacturer*	NY	1	0
Perry	Generator	OH	4	0
Perry K	Generator	IN	11	0
Perstorp Coating Freeport Plant	Manufacturer*	TX	5	0
Perstorp Polyols Inc	Manufacturer*	OH	3	0
Peru	Generator	IN	10	0
Pet Processors Llc	Manufacturer*	OH	1	0
Peter Cremer North American Llp	Manufacturer*	PA	19	0
Petersburg	Generator	IN	13	0
Petro Star Inc North Pole Refinery	Manufacturer*	AK	1	0
Petro Star Valdez Refinery	Manufacturer*	AL	1	0
Petroleum Fuel & Terminal Co-Rensselaer	Manufacturer*	OH	1	0
Petromax Carnegie Plt	Manufacturer*	PA	9	0
Pf Laboratories Inc.	Manufacturer*	NJ	2	0
Pfizer Global Manufacturing	Manufacturer*	CT	5	0
Pfizer Inc	Manufacturer	CT	8	0
Pfizer Inc Memphis Logistics Center	Manufacturer*	UT	5	0
Pfizer Inc Parke-Davis Div	Manufacturer*	MI	1	0
Pfizer Inc Vigo Plant	Manufacturer*	IN	17	0
Pfizer Incorporated	Manufacturer*	MO	4	0
Pfizer Pharmaceuticals	Manufacturer*	PR	2	2
Pfizer Pharmaceuticals Llc	Manufacturer*	PR	2	2

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Pgm Of New England Llc	Manufacturer*	NH	5	0
Pharmacia & Upjohn (Former)	Manufacturer*	CT	3	0
Phelps Dodge High Performance Conductors	Manufacturer*	TN	1	0
Phenix Lumber Company	Manufacturer*	AL	17	0
Phibro-Tech Inc Sumter	Manufacturer*	SC	3	0
Phifer Inc	Manufacturer*	AL	20	0
Phil Sporn	Generator	WV	11	0
Phillips Petroleum Co Former @ Carteret Terminal	Manufacturer*	NJ	6	0
Phillips Petroleum Co.	Manufacturer	TX	4	0
Picway	Generator	OH	8	0
Piece Dye Acquisition Corporation	Manufacturer*	TN	3	0
Piedmont Hardwood Lumber Co	Manufacturer*	NC	1	0
Pierce Biotechnology Inc	Manufacturer*	IL	6	0
Pilgrim	Generator	MA	9	0
Pilot Chemical Co	Manufacturer*	TX	3	0
Pine Mountain Lumber Llc	Manufacturer*	KY	3	0
Pinellas County Resource Recovery	Generator	FL	5	0
Pinnacle Polymers	Manufacturer*	LA	4	0
Pioneer Americas Llc	Manufacturer*	WV	13	1
Pioneer Americas Llc (Db a Olin Chlor Alkali Produc	Manufacturer*	LA	5	0
Piramal Critical Care	Manufacturer*	PA	2	0
Pirkey	Generator	TX	3	0
Pitts Lumber Co. Inc.	Manufacturer*	VT	2	0
Pittsburg	Generator	CA	19	0
Pittsburg Tank & Tower Co - Elevated Tank Division	Manufacturer*	LA	8	0
Pittsburg Tank & Tower Co. Inc.	Manufacturer*	KY	13	0
Pizo Operating Co	Manufacturer*	CO	3	0
Pl Propylene Llc	Manufacturer*	TX	3	0
Placid Refining Company	Manufacturer*	LA	2	0
Plant Crisp	Generator	GA	12	7
Plant Food Co Inc	Manufacturer*	NJ	0	0
Plaskolite South Llc	Manufacturer*	MS	4	0
Plaskolite West Incorporated	Manufacturer*	CA	8	0
Plattsburgh (Ny) Facility C/O Georgia-Pacific Corp	Manufacturer	NY	1	0
Plaze Inc	Manufacturer*	MO	6	0
Pleasant Prairie	Generator	WI	1	0
Pleasants	Generator	WV	8	0
Pliant Corp/Plastic Film Plt	Manufacturer*	PA	2	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Plus Mark Inc	Manufacturer*	TN	19	0
Plymouth Tube Co	Manufacturer*	IL	1	0
Plymouth Tube Company	Manufacturer*	KY	14	0
Pmc Biogenix Inc	Manufacturer*	TN	5	0
Pmp Fermentation Products Inc.	Manufacturer*	IN	6	0
Poet Biorefining	Manufacturer*	IA	2	0
Poet Biorefining - Fostoria Ethanol Llc	Manufacturer*	OH	3	0
Poet Biorefining -Gowrie	Manufacturer*	IA	3	0
Point Beach	Generator	WI	1	0
Polk	Generator	FL	3	0
Polychemie	Manufacturer*	PA	0	0
Polychemie Inc	Manufacturer*	MS	5	0
Polyfiber Llc	Manufacturer*	ME	4	0
Polymer Partners	Manufacturer*	KY	13	0
Polyone	Manufacturer*	TX	5	0
Polyone Clinton	Manufacturer*	TN	27	0
Polyone Corp	Manufacturer*	NJ	2	0
Polypure Incorporated	Manufacturer*	FL	6	0
Polytek Development Corp	Manufacturer*	PA	2	0
Polyurethane Specialties Corp	Manufacturer*	NJ	2	0
Ponderay Newsprint Co	Manufacturer*	WA	6	1
Porocel Industries Llc	Manufacturer*	AR	2	0
Port Arthur Refinery	Manufacturer*	TX	3	0
Port Everglades	Generator	FL	10	0
Port Jefferson	Generator	NY	7	0
Port Neal Corp	Manufacturer*	IA	5	0
Port Townsend Paper Corp	Manufacturer*	WA	14	0
Port Townsend Paper Corporation	Manufacturer	WA	11	0
Port Washington	Generator	WI	1	0
Portland	Generator	PA	2	0
Possum Point	Generator	VA	8	0
Potlatch Forest Products Corp Prescott Lumber	Manufacturer*	AR	5	0
Potlatch Land & Lumber Llc	Manufacturer*	AR	5	0
Potomac River	Generator	VA	8	0
Potsdam Specialty Paper Inc	Manufacturer*	NY	1	0
Powerlab Inc	Manufacturer*	IL	7	0
Powerlane Plant	Generator	TX	3	0
Powerton	Generator	IL	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Ppg Ind. Inc. C/O P.P.G. Industries, Inc.	Manufacturer	WV	8	0
Ppg Industries Chlor-Alkali Plant	Manufacturer*	WV	8	0
Ppg Industries Inc - Lake Charles Complex	Manufacturer*	LA	3	0
Ppg Industries Inc Barberton	Manufacturer*	OH	6	0
Ppg Industries Ohio Inc Circleville Oh	Manufacturer*	OH	13	0
Ppg Industries, Inc.	Manufacturer	LA	8	0
Pq Chester Plt	Manufacturer*	PA	2	0
Pq Corp	Manufacturer*	IL	6	0
Pq Corporation	Manufacturer*	NJ	6	0
Prairie Creek	Generator	IA	4	0
Prairie Island	Generator	MN	7	0
Pratt & Whitney	Manufacturer*	MI	4	0
Pratt & Whitney (Main Plant)	Manufacturer*	FL	5	0
Pratt & Whitney Engine Services	Manufacturer*	FL	4	0
Pratt & Whitney Engine Services Inc	Manufacturer*	FL	3	0
Pratt & Whitney Middletown	Manufacturer*	CT	5	0
Pratt & Whitney Psd Inc	Manufacturer*	CA	4	0
Pratt Paper (Ny) Inc	Manufacturer*	NY	6	0
Praxair Deer Park	Manufacturer*	WA	3	0
Praxair Electronics	Manufacturer*	NY	2	0
Praxair Inc	Manufacturer	NY	3	0
Praxair Inc	Manufacturer	NY	16	0
Praxair Inc Keasby Specialty Products	Manufacturer*	NY	0	0
Praxair Inc.	Manufacturer*	WA	11	0
Praxair Incorporated	Manufacturer*	IN	3	0
Praxair Surface Technologies	Manufacturer*	FL	7	1
Praxair Technology Center	Manufacturer*	PA	3	0
Precision Custom Components Llc	Manufacturer*	PA	3	0
Precision Engines Corporation	Manufacturer*	WV	13	0
Precision Fabrics Group Inc Greensboro Plant	Manufacturer*	NC	1	0
Precision Kidd Steel Aliquippa Plt	Manufacturer*	PA	9	0
Premcor Refining Group Inc Port Arthur	Manufacturer*	TX	3	0
Premier Services Corporation	Manufacturer*	FL	9	0
Premier Turbines	Manufacturer*	MO	3	0
Prestone Holdings Inc	Manufacturer*	IL	2	0
Prestone Products Corp	Manufacturer*	NJ	8	0
Prince Agri Products Inc	Manufacturer*	IL	8	0
Prince Manufacturing Co	Manufacturer*	TN	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Process Research Products	Manufacturer*	NJ	2	0
Procter & Gamble Co Gpdf	Manufacturer*	OH	19	0
Procter & Gamble Company	Manufacturer*	PA	2	0
Procter & Gamble Manufacturing Co Alexandria Plant	Manufacturer*	LA	4	0
Procter & Gamble Manufacturing Co Lima Plant	Manufacturer*	OH	4	0
Procter & Gamble Mfg Co	Manufacturer*	CA	11	0
Procter & Gamble Mfg Co-40 Western Ave	Manufacturer*	NY	6	0
Procter & Gamble Mfg. Co.	Manufacturer*	MD	3	0
Production Hook Up Svc Inc	Manufacturer*	LA	2	0
Pruitt Lumber Company Incorporated	Manufacturer*	NC	3	0
Pueblo	Generator	CO	2	0
Pulliam	Generator	WI	1	0
Pulp And Paper Of America	Manufacturer	NY	1	0
Purdue Pharmaceuticals	Manufacturer*	NC	2	0
Purolator Facet Incorporated	Manufacturer*	NC	1	0
Pursell Technologies Inc.	Manufacturer*	AL	23	0
Putnam	Generator	FL	6	1
Putney Paper Company Mill & Lagoons	Manufacturer*	WA	2	0
Pvs Chemical Solutions	Manufacturer*	NY	1	0
Pvs Chemicals Inc (Illinois)	Manufacturer*	IL	3	0
Pvs Chemicals, Inc. (Illinois)	Manufacturer	IL	3	0
Pw Hardwood Dry Kiln	Manufacturer*	PA	8	0
Quad Cities	Generator	IL	8	0
Quad County Corn Processors	Manufacturer*	IA	1	0
Quaker Oats Co	Manufacturer*	IL	4	0
Quality Carriers Incorporated	Manufacturer*	NJ	5	0
Quality Linings & Painting	Manufacturer*	CT	1	0
Quapaw Products	Manufacturer*	AZ	3	0
Quindaro	Generator	KS	3	0
R A Reid	Generator	KY	8	0
R D Green	Generator	KY	8	0
R E Burger	Generator	OH	2	0
R Gallagher	Generator	IN	15	0
R I Recycled Metals Llc	Manufacturer*	UT	4	0
R M Schahfer	Generator	IN	7	0
R W Miller	Generator	TX	3	0
Radco Industries	Manufacturer*	IL	3	0
Radiator Specialty Co	Manufacturer*	NC	1	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Radicispandex Corp	Manufacturer*	AL	20	0
Railworks Wood Waste Energy	Manufacturer*	NC	2	0
Rainier Plywood Co	Manufacturer*	WA	12	2
Ralcorp Frozen Bakery Products	Manufacturer*	AL	12	2
Randall Banks Scrap Metal	Manufacturer*	AL	34	0
Raritan River Steel Co	Manufacturer*	NJ	2	0
Rathgibson Inc	Manufacturer*	NJ	0	0
Ravenswood	Generator	NY	8	0
Ray Olinger	Generator	TX	3	0
Ray White Lumber Company	Manufacturer*	AR	7	0
Rayonier Grays Harbor Lumber Oper	Manufacturer*	WA	12	1
Rayonier Performance Fibers Jesup Mill	Manufacturer*	GA	14	0
Rayonier Performance Fibers Llc	Manufacturer*	FL	5	1
Rayonier Wood Products Llc Baxley	Manufacturer*	ID	5	0
Rays Tree & Landscaping	Manufacturer*	MO	6	0
Raytheon Aircraft Company	Manufacturer*	CT	2	0
Reading Alloys	Manufacturer*	PA	2	0
Reagent Chemical & Research Inc	Manufacturer*	NJ	0	0
Reaxis Inc	Manufacturer*	PA	9	0
Rec Advanced Silicon Materials Llc	Manufacturer*	MT	2	0
Reckitt Benckiser	Manufacturer*	NJ	0	0
Recycled Paper Board Inc	Manufacturer*	NJ	2	0
Red Wing	Generator	MN	7	0
Redman Equipment & Manufacturing Co	Manufacturer*	CO	11	0
Redondo Beach	Generator	CA	15	1
Reeves Brothers Incorporated	Manufacturer*	SC	2	0
Reg Inc - St Rose Biodiesel Production Plant	Manufacturer*	LA	4	0
Reg Seneca Llc	Manufacturer*	IL	5	0
Regeneron Pharmacueticals	Manufacturer*	NY	1	0
Regis Technologies Inc	Manufacturer*	IL	2	0
Reichhold Chemicals Inc	Manufacturer*	IL	5	0
Reichhold Inc	Manufacturer*	MS	6	0
Renessenz Llc Colonels Island Facility	Manufacturer*	IA	13	0
Renessenz Llc Jacksonville	Manufacturer*	FL	6	1
Renfro Corporation Ft Payne	Manufacturer*	AL	25	0
Rentech Energy Midwest Corp	Manufacturer*	IL	7	0
Republic Special Metals	Manufacturer*	OH	6	0
Republic Steel Canton Facility	Manufacturer*	OH	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Republic Steel Lackawanna	Manufacturer*	OH	1	0
Republic Steel Lorain Plant	Manufacturer*	OH	1	0
Republic Steel Massillon Cfb	Manufacturer*	OH	6	0
Republic Technologies International Llc	Manufacturer*	IL	3	0
Republic Techs. Intl. Baltimore S & S	Manufacturer*	MD	3	0
Resinall Corporation	Manufacturer*	NC	1	0
Resinall Mississippi Inc	Manufacturer*	MS	2	0
Resolute Forest Products Catawba Operations	Manufacturer*	TN	2	0
Revlis Corp	Manufacturer*	OH	6	0
Rex Brown	Generator	MS	4	1
Rex Lumber Bristol Florida	Manufacturer*	FL	9	0
Reynolds Metals Co St Lawrence Reduction Plant	Manufacturer*	NY	1	0
Reynolds Metals Co.	Manufacturer	AL	37	0
Reynolds Packaging Group	Manufacturer*	AR	2	0
Rg Steel Mill	Manufacturer*	OH	3	0
Rg Steel Sparrows Point Llc	Manufacturer*	MI	3	0
Rg Steel Wheeling Llc Allenport Plant	Manufacturer*	SC	4	0
Rhineland Paper Company	Manufacturer	WI	2	0
Rhodes Technologies	Manufacturer*	SC	4	0
Rhodia Inc	Manufacturer*	IL	2	0
Rhodia Inc - Unit #6	Manufacturer*	LA	3	0
Rhodia Incorporated	Manufacturer*	SC	2	0
Rhodia Vernon Guar Plant	Manufacturer*	TX	3	0
Rimtec Corp	Manufacturer*	NJ	2	0
Rittman Paperboard	Manufacturer*	OH	6	0
River Rouge	Generator	MI	4	0
Riverbend	Generator	LA	3	0
Riverland Industries Inc	Manufacturer*	LA	3	0
Riverside	Generator	OK	3	0
River side	Generator	OK	8	0
Riverside	Generator	OK	8	0
Riverside	Generator	OK	8	0
Riverton	Generator	KS	3	0
Riverwood International Corp.	Manufacturer	LA	2	0
Riverwood International Corporation	Manufacturer*	GA	5	0
Rmi Titanium Tetrachloride Plnt	Manufacturer*	OH	0	0
Robert E Ritchie	Generator	AR	5	0
Roche Carolina Incorporated	Manufacturer*	SC	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Rock-Tenn Aurora Converting	Manufacturer*	IN	3	0
Rock-Tenn Co	Manufacturer*	IN	7	0
Rock-Tenn Co Stroudsburg Mill	Manufacturer*	PA	1	0
Rock-Tenn Co.	Manufacturer*	MI	1	0
Rock-Tenn Converting Co (Dallas Mill)	Manufacturer*	TX	3	0
Rock-Tenn Cp Llc	Manufacturer*	FL	7	0
Rock-Tenn Mill Co Llc	Manufacturer*	AL	18	0
Rock-Tenn Missisquoi Coated Mill	Manufacturer*	WA	1	0
Rockport	Generator	IN	13	0
Rocktenn	Manufacturer*	AL	34	0
Rocktenn Cp Llc	Manufacturer*	VT	2	0
Rockwood Lithium Inc	Manufacturer*	NC	0	0
Rockwood Pigments	Manufacturer*	IL	3	0
Rocky Creek Lumber Co Llc	Manufacturer*	AL	24	0
Rodemacher	Generator	LA	2	0
Rogers Clinton Read Mix	Manufacturer*	IL	5	0
Rogers Corp High Performance Foams Div Woodstock	Manufacturer*	CT	0	0
Rohm & Haas - Louisville Pl Ant	Manufacturer*	KY	15	0
Rohm & Haas Chemical Richmond St Plt	Manufacturer*	PA	2	0
Rohm & Haas Chemicals Llc	Manufacturer*	WA	12	0
Rohm & Haas Chemicals Llc - Knoxville Site	Manufacturer*	TN	27	0
Rohm & Haas Chemicals Llc B Ayport Plant	Manufacturer*	TX	4	0
Rohm & Haas Delaware Valley	Manufacturer*	CO	10	0
Rohm & Haas Electronic Materials Cmp Inc B2 B3 B8	Manufacturer*	FL	2	0
Rohm & Haas Electronic Materials Llc	Manufacturer*	NY	3	0
Rohm & Haas Electronics Materials	Manufacturer*	MA	0	0
Rohm And Haas Co., Louisville Plant	Manufacturer	KY	15	0
Rohm And Haas Company, Philadelphia Plant	Manufacturer	PA	2	0
Rohmax Usa Lp	Manufacturer*	TX	3	0
Roll Forming Corporation	Manufacturer*	KY	10	0
Rolls-Royce Corp- Plants 5 & 8	Manufacturer*	IN	11	0
Rome Strip Steel Co	Manufacturer*	NY	1	0
Ronald Mark Associates Inc	Manufacturer*	NJ	6	0
Roquette America Inc	Manufacturer*	IA	1	0
Rosboro Llc Springfield Facility	Manufacturer*	OR	8	1
Roseton	Generator	NY	6	0
Rousselot Gelatine	Manufacturer*	MA	2	0
Roux Laboratories / Colomer Usa Inc	Manufacturer*	FL	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Rowell Chemical Corp	Manufacturer*	IL	4	0
Roxboro	Generator	NC	1	0
Roy Anderson Lumber Co	Manufacturer*	KY	10	0
Roy Anderson Lumber Co Inc	Manufacturer*	KY	10	0
Royal Adhesives & Sealants Llc	Manufacturer*	SC	1	0
Rsa Corporation	Manufacturer*	DE	3	0
Rsg Forest Products Molalla Division	Manufacturer*	OR	8	2
Rt Vanderbilt Co Inc - Murray Div	Manufacturer*	KY	9	0
Rubicon Llc	Manufacturer*	LA	4	0
Rush Island	Generator	MO	3	0
Russell Corp Coosa River Facility	Manufacturer*	CT	23	0
Russell Corporation	Manufacturer*	AL	14	0
Rutland Lumber Company Inc	Manufacturer*	MS	3	0
S D Warren Co	Manufacturer*	MI	2	0
S O Purdom	Generator	FL	8	0
S. D. Warren Co.	Manufacturer	ME	2	0
S.A. Day Buffalo Flux Facility Johnson Manufacturi	Manufacturer*	OH	3	0
S.D Warren (Westbrook Mill)	Manufacturer*	ME	3	0
S.D. Warren Company	Manufacturer	MI	2	0
S&B Sawmill Llc	Manufacturer*	LA	1	0
Sabic Innovative Plastics Us Llc	Manufacturer*	AL	21	0
Sabine	Generator	TX	8	0
Sabreliner Corporation	Manufacturer*	NC	4	0
Saes Smart Materials Inc	Manufacturer*	OH	0	0
Safety-Kleen Systems	Manufacturer*	IN	3	0
Sage Automotive Interiors - Abbeville Plant	Manufacturer*	SC	2	0
Saiden Technologies	Manufacturer*	NC	1	0
Saint Gobain Proppants	Manufacturer*	AR	3	0
Saint Laurent Forest Products - West Point	Manufacturer*	VA	2	0
Saint Louis Lithographing Company	Manufacturer*	NC	3	0
Saint-Gobain Grains & Powders Coating Solutions	Manufacturer*	NY	3	0
Saint-Gobain Norpro	Manufacturer*	TX	3	0
Saint-Gobain Performance Plast Ics	Manufacturer*	NY	1	0
Salem	Generator	NJ	9	0
Sam Bertron	Generator	TX	8	0
Sam Rayburn	Generator	TX	3	0
Samuel Strapping Systems Inc	Manufacturer*	SC	2	0
San Juan	Generator	NM	8	1

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
San Onofre	Generator	CA	13	0
Sandvik Materials Tech	Manufacturer*	PA	0	0
Sanford	Generator	FL	6	1
Sanofi Pasteur Inc	Manufacturer*	PR	1	0
Sanofi-Aventis Group Aventis Pharmaceuticals	Manufacturer*	MO	4	0
Santolubes Llc - Findett Corporation	Manufacturer*	MO	5	0
Sappi Cloquet Llc	Manufacturer*	MN	1	0
Sappi Fine Paper	Manufacturer	ME	3	0
Sappi Fine Paper (S.D. Warren) Mill	Manufacturer*	ME	2	0
Sargent & Greenleaf	Manufacturer*	KY	11	0
Sartomer Usa Llc	Manufacturer*	PA	2	0
Sasol North America Inc Lake Charles Chemical Comp	Manufacturer*	LA	3	0
Saturn Machine & Welding	Manufacturer*	KY	1	0
Saugus Resco	Generator	MA	7	0
Saunders Mfg Co Inc	Manufacturer*	MI	2	0
Savannah Acid Plant Llc	Manufacturer*	GA	10	0
Savannah Sugar Refinery	Manufacturer*	GA	11	0
Sayreville Boro Redevelopment Site	Manufacturer*	NY	0	0
Sb Boron Corp	Manufacturer*	IL	4	0
Sca Personal Care	Manufacturer*	MA	10	0
Sca Tissue Menasha Paper Mill	Manufacturer*	WI	0	0
Scattergood	Generator	CA	15	1
Scepter Greeneville Inc	Manufacturer*	TX	19	0
Scepter Inc	Manufacturer*	IN	13	0
Scepter Inc - Seneca Falls Operations	Manufacturer*	NY	1	0
Scherer	Generator	GA	5	0
Schering Corp	Manufacturer*	NJ	6	0
Schick Manufacturing Inc	Manufacturer*	AL	1	0
Schiller	Generator	NH	9	0
Schmack Biomass Llc - Anaerobic Digestion Facility	Manufacturer*	OK	10	0
Scholz	Generator	FL	10	8
Schuykill	Generator	PA	2	0
Schuykill Metals Division Of Exide Corporation	Manufacturer*	MO	4	0
Scm Ashtabula Landfill	Manufacturer*	OH	0	0
Scotch & Gulf Lumber Llc	Manufacturer*	AL	18	0
Scotch Gulf Lumber Llc	Manufacturer*	AL	14	0
Scotch Lumber Co Inc	Manufacturer*	AL	18	0
Scotch Plywood Co Inc	Manufacturer*	AL	24	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Scott S Scrap Iron & Metal	Manufacturer*	MS	4	0
Scrubgrass Generating Company Lp	Generator	PA	4	0
Sds Lumber Co Bingen Plywood Corp	Manufacturer*	WA	9	3
Sea Lion Technology Inc	Manufacturer*	TX	4	0
Seabrook	Generator	NH	9	0
Seaford Lumber Company	Manufacturer*	NC	0	0
Seago Lumber Company	Manufacturer*	MS	4	0
Seagram Americas	Manufacturer*	MO	3	0
Seagram Lawrenceburg Distillery	Manufacturer*	KY	19	0
Sealed Air Corp - Modena Plant	Manufacturer*	PA	2	0
Sealed Air Corp - Reading Plant	Manufacturer*	PA	2	0
Seaman Paper Mill	Manufacturer*	MA	0	0
Seaman Timber Co (Castleberry Division)	Manufacturer*	AL	21	0
Seaman Timber Co Inc.	Manufacturer*	AL	30	0
Seaport Lumber Co Raymond	Manufacturer*	WA	14	0
Seeler Industries Inc	Manufacturer*	IL	4	0
Sekisui Specialty Chemicals America Llc	Manufacturer*	KY	9	0
Seminole	Generator	OK	4	1
Seminole	Generator	OK	6	1
Senco Products Inc	Manufacturer*	PA	11	0
Senior Operation Inc	Manufacturer*	IL	3	0
Sensient Colors Inc	Manufacturer*	NJ	0	0
Sentury Reagents Inc.	Manufacturer*	TN	2	0
Sequoyah	Generator	TN	27	0
Sequoyah Fuels Corporation	Manufacturer*	OK	4	0
Service Machine Specialties	Manufacturer*	LA	1	0
Severstal Wheeling Inc - Follansbee	Manufacturer*	AL	9	0
Seward	Generator	PA	1	0
Sewaren	Generator	NJ	10	0
Sfi Of Tennessee	Manufacturer*	TN	5	0
Sg Solutions Llc / Wabash River Combined Cycle Pla	Manufacturer*	IN	17	0
Sharpsville Quality Products	Manufacturer*	PA	4	0
Shaw Industries / Plant 8t	Manufacturer*	SC	1	0
Shaw Industries Group Inc Plant 65	Manufacturer*	AL	19	0
Shaw Industries Group Inc. P Lant 8s	Manufacturer*	SC	2	0
Shaw Mid-States Pipe Fabricating Inc	Manufacturer*	AR	6	0
Shawnee	Generator	KY	11	0
Shell Chemical Lp	Manufacturer*	TX	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Shell Chemical Lp (Mobile Site)	Manufacturer*	AR	14	0
Shell Chemical Yabucoa Inc	Manufacturer*	PR	2	2
Shell Norco Chemical Plant East Site	Manufacturer*	LA	4	0
Shell Norco Chemical Plant West Site	Manufacturer*	LA	6	0
Shell Oil Co Westhollow Tech Center	Manufacturer*	TX	3	0
Shell Oil Products Us - Martinez Refinery	Manufacturer*	CA	15	0
Shell Oil Products Us - Puget Sound Refinery	Manufacturer*	WI	11	1
Shenango Inc	Manufacturer*	PA	9	0
Sherburne Co	Generator	MN	0	0
Sherwin Alumina Lp	Manufacturer*	AL	4	0
Shintech Louisiana Llc - Addis Plant A	Manufacturer*	LA	1	0
Shiras	Generator	MI	1	0
Shire Pharmaceuticals	Manufacturer*	MA	2	0
Shurtape Technologies Incorporated	Manufacturer*	NC	0	0
Shurtape Technologies Incorporated Hudson Opp Plan	Manufacturer*	NC	1	0
Shurtape Technologies Llc - Hickory Tape Plant	Manufacturer *	NC	1	0
Si Group Inc	Manufacturer*	TX	5	0
Si Group Inc /Rott Jct Fac	Manufacturer*	NY	0	0
Sibley	Generator	MO	4	0
Sidney Sugar Facility	Manufacturer*	ND	5	0
Siegfried Usa Llc	Manufacturer*	NJ	7	0
Sierra Pacific	Manufacturer*	WA	12	1
Sierra Pacific Industries - Centralia	Manufacturer*	WA	13	0
Signode	Manufacturer*	IL	4	0
Sikorsky Aircraft Shelton Iii	Manufacturer*	CT	3	0
Silver Bay Power Company	Manufacturer	MN	1	0
Silver Eagle Refining Woods Cross	Manufacturer*	UT	3	0
Silver Lake	Generator	MN	1	0
Sim Gideon	Generator	TX	3	0
Simmons Feed Mill	Manufacturer*	MO	2	0
Simplot Phosphates Llc	Manufacturer*	VA	4	0
Simpson Longview Lumber Operation	Manufacturer*	WA	11	3
Simpson Tacoma Kraft Co Llc	Manufacturer*	WA	15	1
Simpson Timber Co St Yd Sawmill 5	Manufacturer*	WA	13	0
Sioux	Generator	MO	5	0
Sivance Llc	Manufacturer*	FL	3	0
Skips Cutting Inc Ephrata	Manufacturer*	RI	3	0
Skookum Lumber Plant	Manufacturer*	WA	13	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Skyline Steel Fabrication	Manufacturer*	AR	3	0
Smart Papers Hamilton Mill	Manufacturer*	OH	1	0
Smelter Service Corp	Manufacturer*	TN	28	0
Smi Steel Incorporated	Manufacturer*	AL	21	0
Smithkline Beecham Research Co	Manufacturer*	PA	2	0
Smooth-On Inc	Manufacturer*	NJ	2	0
Smurfit -Stone Container Corp.	Manufacturer	SC	3	0
Smurfit Newsprint Corp Newberg Mill	Manufacturer	OR	9	2
Smurfit Newsprint Corporation Newberg Mill	Manufacturer*	TN	9	2
Smurfit Stone Container Corp Circleville Mill	Manufacturer*	OH	13	0
Smurfit Stone Container Enterprises Inc	Manufacturer*	OH	12	0
Smurfit-Stone Container Corp.	Manufacturer	IN	6	0
Smurfit-Stone Container Corp.	Manufacturer	IN	2	0
Smurfit-Stone Container Corp.	Manufacturer	IN	17	0
Smurfit-Stone Container Corp./Brewton	Manufacturer	AL	21	1
Smurfit-Stone Container Enterp Rises Inc	Manufacturer*	MI	1	0
Smurfit-Stone Container Enterprises Inc	Manufacturer*	GA	6	1
Smurfit-Stone Container Enterprises Inc.	Manufacturer*	IN	6	0
Snider Industries, Incorporated C/O Snider Industries, Inc.	Manufacturer	TX	3	0
Solgar Vitamin & Herb	Manufacturer*	NJ	2	0
Solgar Vitamin & Herb Co	Manufacturer*	NJ	2	0
Solo Cup Operating Corporation	Manufacturer*	VT	3	0
Solomon Grind-Chem Service Inc	Manufacturer*	IL	7	0
Solsil Inc	Manufacturer*	OR	12	0
Solutia Inc Delaware River Plant	Manufacturer*	NJ	2	0
Solutia Inc	Manufacturer*	MI	4	0
Solutia Inc Anniston Plant	Manufacturer*	AL	25	0
Solutia Inc Krummrich II	Manufacturer*	IL	3	0
Solutia Incorporated	Manufacturer*	GA	7	0
Solutia-Ops At Flexsys Nitro	Manufacturer*	WV	2	0
Solvay Chemicals Deer Park Plant	Manufacturer*	TX	3	0
Solvay Chemicals Inc	Manufacturer*	AL	12	0
Solvay Solexis Inc	Manufacturer*	NJ	2	0
Solvay Specialty Polymers Usa Llc	Manufacturer*	OK	11	0
Somerset Energy Refining Llc	Manufacturer*	MA	24	0
Sonoco Products Co	Manufacturer*	WA	12	2
Sonoco Products Company	Manufacturer*	SC	3	0
Sooner	Generator	OK	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
South Hampton Resources Inc	Manufacturer*	TX	3	0
South Meadow Station	Generator	CT	10	0
South Oak Creek	Generator	WI	1	0
South Texas	Generator	TX	9	0
Southco Inc	Manufacturer*	PA	2	0
Southeast Paper Manufacturing Co Inc	Manufacturer	GA	7	0
Southeastern Adhesives Company	Manufacturer*	NC	1	0
Southeastern Metals	Manufacturer*	FL	6	0
Southern Ionics Inc	Manufacturer*	AL	14	0
Southern Ionics Incorporated	Manufacturer*	AL	23	0
Southern Minnesota Beet Sugar Cooperative	Manufacturer*	MN	2	0
Southern Precision Sands Llc	Manufacturer*	AL	23	0
Southern Repair & Maintenance Llc	Manufacturer*	LA	3	0
Southern States Chemical	Manufacturer*	NE	2	0
Southern States Coop Inc	Manufacturer*	NC	0	0
Southern States Phosphate & Fe Rtilizer Co	Manufacturer*	IA	11	0
Southern States Winchester Feed Mill	Manufacturer*	KY	4	0
Southern Water Treatment Co Inc	Manufacturer*	SC	2	0
Southeastern Timber Products Llc	Manufacturer*	MS	2	0
Southland Steel	Manufacturer*	MI	4	0
Southwest Iowa Renewable Energy	Manufacturer*	IA	5	0
Southwestern	Generator	OK	1	0
Southworth Paper Turners Falls Mill	Manufacturer*	MA	3	0
Sp Newsprint Co Llc	Manufacturer*	LA	7	0
Spanish Trail Lumber Co Llc	Manufacturer*	FL	8	0
Sparrows Point	Generator	MD	7	0
Spartansburg Forest Products	Manufacturer*	PA	4	0
Spearfish Forest Products	Manufacturer*	TX	2	0
Special Metals Corp	Manufacturer*	OH	0	0
Speciality Chemical Products Llc	Manufacturer*	WV	10	3
Specialty Materials	Manufacturer*	MD	5	0
Specialty Minerals	Manufacturer*	MD	1	0
Specialty Products Inc Lakewood	Manufacturer*	WA	13	0
Spectrum Brands	Manufacturer*	AR	23	0
Spencer Kellogg Div Textron	Manufacturer*	MD	3	0
Spi Pharma Inc	Manufacturer*	FL	1	0
Spinnerin Yarn Co Inc	Manufacturer*	NY	2	0
Spontex Inc	Manufacturer*	TN	28	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Spray Forming International	Manufacturer*	SC	3	0
Spray Products	Manufacturer*	RI	2	0
Spray Products Corp	Manufacturer*	PA	2	0
Springs Global Grace Complex	Manufacturer*	SC	2	0
Springs Industries Griffin Finishing Plant	Manufacturer*	GA	5	0
St Charles Operations (Taft/Star) Union Carbide Co	Manufacturer*	LA	3	0
St Clair	Generator	MI	4	0
St Johns River Power	Generator	FL	11	1
St Lucie	Generator	FL	9	1
St Paul Park Refining Co Llc	Manufacturer*	MN	8	0
St Services Westwego Liquid Commodity - Westwego T	Manufacturer*	MO	3	0
St. Croix Alumina L.L.C.	Manufacturer	VI	5	2
Stabilus	Manufacturer*	NC	0	0
Staflex Prods.	Manufacturer*	NJ	6	0
Standard Materials Llc - Mandeville Faci	Manufacturer*	LA	3	0
Standard Steel Llc	Manufacturer*	PA	0	0
Stanson Corporation	Manufacturer*	NJ	2	0
Stanton	Generator	ND	5	0
Starkey Chemical Process Co	Manufacturer*	IL	4	0
Starmet Cmi	Manufacturer*	SC	3	0
Starpet Incorporated	Manufacturer*	NC	1	0
Steel Dynamics Inc	Manufacturer*	IN	6	0
Steel Dynamics Inc - Engineered Bar Products Div	Manufacturer*	IN	11	0
Steel Dynamics Inc Roanoke Bar Div	Manufacturer*	VA	2	0
Steel Dynamics Inc Structura L & Rail Div	Manufacturer*	IN	6	0
Steel Technologies Inc	Manufacturer*	MI	4	0
Steelscape	Manufacturer*	AL	12	5
Stepan Co	Manufacturer*	IL	5	0
Stepan Co Millsdale Road	Manufacturer*	IL	4	0
Steris Corp St Louis Operations	Manufacturer*	MO	3	0
Sterling Fibers Inc Santa Rosa Plant	Manufacturer*	KS	8	0
Sterling Steel Co Llc	Manufacturer*	IL	6	0
Sterlington	Generator	LA	4	0
Stern Chemtech Corporation	Manufacturer*	MD	3	0
Stewart Warner South Wind Corporation	Manufacturer*	KY	13	0
Stimson Lumber Co Bonner Operation	Manufacturer*	MT	2	1
Stimson Lumber Co‎	Manufacturer*	PA	8	0
Stimson Washington Inc	Manufacturer*	WA	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Stone Container Corporation Bag Packaging Equipmen	Manufacturer*	UT	3	0
Stone Forest Industries Orangeburg	Manufacturer*	SC	2	0
Streator Dependable	Manufacturer*	IN	1	0
Structural Metals Inc	Manufacturer*	TX	4	0
Stryker Creek	Generator	TX	3	0
Styrolution America Llc	Manufacturer*	AL	41	0
Summer	Generator	SC	1	0
Summerill Tube	Manufacturer*	PA	1	0
Summit Specialty Chemicals @ Flemington Ind Pk	Manufacturer*	NV	0	0
Sun Drilling Products Corp	Manufacturer*	LA	3	0
Sun Products Corp Baltimore Plant	Manufacturer*	MD	3	0
Sunbeam Outdoor Products	Manufacturer*	MO	2	0
Sunbelt Chemicals Corp	Manufacturer*	LA	2	0
Sunbury	Generator	PA	0	0
Suncor Energy Commerce City Refinery	Manufacturer*	DE	1	0
Sunnyside Cogeneration Associates	Generator	UT	4	0
Sunoco Haverhill North Coke Co	Manufacturer*	OK	9	0
Sunoco Inc	Manufacturer*	NJ	2	0
Sunoco Inc (R&M) Philadelphia Refinery	Manufacturer*	PA	2	0
Sunoco Inc (R&M) - Marcus Hook Refinery	Manufacturer*	PA	2	0
Sunoco Inc (R&M) Frankford P Lant	Manufacturer*	PA	2	0
Sunoco Partners Mkt & Term Lp Darby Creek Tank Far	Manufacturer*	PA	2	0
Sunoco, Inc Marcus Hook Refinery	Manufacturer	PA	2	0
Sunoco, Inc. (R & M) Philadelphia Refinery	Manufacturer	PA	2	0
Superior Tube Collegeville Fac	Manufacturer*	PA	2	0
Superior Wood Components	Manufacturer*	AL	17	0
Superior Wood Treating	Manufacturer*	WA	12	2
Surface Specialties Incorporated	Manufacturer*	SC	3	0
Surry	Generator	VA	6	0
Susquehanna	Generator	PA	0	0
Suwannee River	Generator	FL	3	1
Swepeco Tube Llc	Manufacturer*	NJ	2	0
Swift Lumber Inc	Manufacturer*	AL	14	0
Syl Laskin	Generator	MN	1	0
Symons Manufacturing Co	Manufacturer*	IL	4	0
Syngenta Crop Protection Inc	Manufacturer*	AL	1	0
Syngenta Crop Protection Llc Saint Gabriel Facilit	Manufacturer*	LA	5	0
Synray Corp	Manufacturer*	NJ	6	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Syntech Chemicals Inc	Manufacturer*	TX	4	0
Syrgis Performance Initiators Inc	Manufacturer*	CA	5	0
T & L Specialty Co	Manufacturer*	NC	5	0
T & S Hardwoods Incorporated	Manufacturer*	NC	2	0
T J Moss Lumber Company	Manufacturer*	AL	46	0
T K Stanley Inc	Manufacturer*	MS	2	1
Taber Extrusions Llc	Manufacturer*	NJ	10	0
Tacoma Metals Inc	Manufacturer*	WA	13	1
Taft Plant Union Carbide Corporation	Manufacturer	LA	4	0
Talbot Industries Inc	Manufacturer*	MO	3	0
Tall Corn Ethanol	Manufacturer*	IA	3	0
Tama Paperboard	Manufacturer*	IL	4	0
Tamarack Mills (Db a Evergreen Forests)	Manufacturer*	KY	3	0
Taminco Inc	Manufacturer*	FL	8	0
Taminco Higher Amines Inc	Manufacturer*	MO	4	0
Taminco Inc	Manufacturer*	LA	5	0
Tamko Roofing Products	Manufacturer*	AL	18	0
Tanners Creek	Generator	IN	19	0
Tapi Puerto Rico Inc	Manufacturer*	PR	2	2
Tara Technologies Corp	Manufacturer*	FL	8	0
Tate & Lyle	Manufacturer*	MN	1	0
Tate & Lyle Decatur	Manufacturer*	IL	5	0
Tate & Lyle Ingredients	Manufacturer*	ME	1	0
Tate & Lyle Loudon	Manufacturer*	TN	27	0
Tate & Lyle Na Sugars Inc. Brooklyn Refinery	Manufacturer	NY	7	0
Tate & Lyle North American Sugars Inc - Baltimore Refinery	Manufacturer	MD	8	0
Tate & Lyle North American Sugars Inc - Chalmette Plant	Manufacturer	LA	4	0
Tate & Lyle Sagamore	Manufacturer*	IN	16	0
Tate & Lyle Sucralose Inc	Manufacturer*	AL	18	0
Tate&Lyle Citric Acid	Manufacturer*	OH	4	0
Tate&Lyle Van Buren	Manufacturer*	CA	3	0
Taubensee Steel & Wire Co	Manufacturer*	IL	4	0
Tdc Llc - Westlake Plant	Manufacturer*	LA	3	0
Tdy Industries Inc Db a Wah Chang	Manufacturer*	PA	9	2
Tear A Part Auto Recycling	Manufacturer*	VA	3	0
Techalloy Co Inc	Manufacturer*	IL	3	0
Teche	Generator	LA	7	0
Technic Inc	Manufacturer*	RI	4	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Tect Power	Manufacturer*	CT	5	0
Tecumseh Ec	Generator	KS	5	0
Teel Plastics	Manufacturer*	WV	2	0
Teknor Apex Tennessee Co (Aka Haywood Co)	Manufacturer*	TN	4	0
Temple-Inland	Manufacturer*	TX	12	0
Temple-Inland Buna Lumber Operation	Manufacturer*	TX	3	0
Temple-Inland Pineland Complex	Manufacturer*	TX	3	0
Temple-Inland Rome Linerboard Mill	Manufacturer*	GA	17	0
Temple-Inland Southwest Louisiana Lumber Operation	Manufacturer*	MD	1	0
Tenn Eastman Div, A Div Of Eastman Chemical Co	Manufacturer	TN	14	0
Tenneco Packaging Counce Mill	Manufacturer	TN	17	0
Tennessee Alloys Co	Manufacturer*	AL	34	0
Tennessee Aluminum Processors Inc	Manufacturer*	AL	25	0
Terra Bioenergy Llc	Manufacturer*	MS	3	0
Terra International (Oklahoma) Inc/Woodward Comple	Manufacturer*	OK	3	0
Terra Mississippi Nitrogen (Melamine Facility)	Manufacturer*	LA	3	0
Terra Mississippi Nitrogen Inc	Manufacturer*	LA	3	0
Terra Mississippi Nitrogen Inc (Yazoo Facility)	Manufacturer*	MT	3	0
Terra Nitrogen Lp	Manufacturer*	AR	5	0
Terra Nitrogen Lp/Verdigris Plant	Manufacturer*	OR	3	0
Tesoro Alaska - Kenai Refinery	Manufacturer*	AK	1	0
Tesoro Corporation	Manufacturer*	CA	11	0
Tesoro Corporation-Anacortes Refinery	Manufacturer*	WA	11	1
Tesoro Mandan Refinery	Manufacturer*	NJ	5	0
Tesoro Refining & Marketing Co	Manufacturer*	CA	15	0
Tesoro Sulfur Recovery Plant	Manufacturer*	CA	11	0
Tessengerlo Kerely Inc	Manufacturer*	AL	17	0
Tetra Chemicals/Lake Charles P Lant	Manufacturer*	LA	3	0
Tetra Pak	Manufacturer*	MS	2	0
Teva Pharmaceuticals Usa	Manufacturer*	MO	1	0
Teva Pharmaceuticals Usa Inc	Manufacturer*	NC	1	0
Texas Eastman Division Longview	Manufacturer*	TX	3	0
Texmark Chemicals	Manufacturer*	TX	3	0
Texon	Manufacturer*	MA	2	0
Thakar Aluminum Corp	Manufacturer*	OR	3	0
Thatcher Co	Manufacturer*	UT	3	0
The Andersons Inc Crestline Ethanol Facility	Manufacturer*	OH	3	0
The Dow Chemical Co	Manufacturer*	MI	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
The Dow Chemical Co - Louisiana Operations	Manufacturer*	LA	1	0
The Dow Chemical Co - Salt Dome Operations	Manufacturer*	TX	5	0
The Dow Chemical Company	Manufacturer	LA	2	0
The Dow Chemical Company	Manufacturer	LA	3	0
The Dow Chemical Company Texas Operations	Manufacturer	TX	4	0
The Dumont Company	Manufacturer*	GA	3	0
The Layman Company	Manufacturer*	MO	3	0
The Procter & Gamble Manufacturing Company	Manufacturer*	NC	1	0
The Procter & Gamble Paper Products Co	Manufacturer*	PA	0	0
The Procter & Gamble Paper Products Co.	Manufacturer	WI	0	0
Theis Precision Steel Corporation	Manufacturer*	CT	2	0
Therm Inc	Manufacturer*	NY	1	0
Thermal Science Inc	Manufacturer*	MS	6	0
Thermasys Corp	Manufacturer*	AL	21	0
Thermoplastic Processes Inc	Manufacturer*	NJ	2	0
Thilmany Paper Mill	Manufacturer*	WI	0	0
Thilmany -Div. International Paper Co.	Manufacturer	WI	0	0
Thomas C Ferguson	Generator	TX	3	0
Thomas Hill	Generator	MO	3	0
Thomas Steel Strip Corp	Manufacturer*	OH	3	0
Thor Fabricating Llc	Manufacturer*	LA	2	0
Thorco Industries Incorporated	Manufacturer*	MS	3	0
Three Mile Island	Generator	PA	0	0
Ti Automotive	Manufacturer*	KY	4	0
Tiarco Chemical	Manufacturer*	TN	2	0
Tifton Aluminum Co. Inc	Manufacturer*	IA	5	0
Tillamook Lumber Co	Manufacturer*	OR	11	0
Timberland Pallet & Hardwood Company	Manufacturer*	MS	8	0
Tin (Dba International Paper Bogalusa Mill)	Manufacturer*	MA	4	0
Tin Inc (Dba International Paper Orange Mill)	Manufacturer*	TX	3	0
Titan Wheel Corp Of Illinois	Manufacturer*	IL	8	0
Titanium Metals Corp	Manufacturer*	NY	2	0
Titanium Metals Corp (Dba Timet)	Manufacturer*	PA	3	0
Titus	Generator	PA	2	0
Tm Deer Park Services Lp	Manufacturer*	TX	3	0
Tokusen Usa Inc	Manufacturer*	AR	3	0
Tokusen Usa Inc Scottsburg Jfs America	Manufacturer*	KY	5	0
Toledo (Or) Facility C/O Georgia-Pacific Corp	Manufacturer	OR	4	1

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Toledo Refining Co Llc	Manufacturer*	OK	3	0
Toll Solutions Llc	Manufacturer*	SC	1	0
Tolmar Inc	Manufacturer*	CT	2	0
Tony L Stec Lumber	Manufacturer*	PA	3	0
Tool Gauge & Machine Works Inc	Manufacturer*	WV	13	0
Toray Fluorofibers (America) Inc	Manufacturer*	AL	41	0
Torbitt & Castleman Co	Manufacturer*	MD	15	0
Torpedo Speciality Wire Inc.	Manufacturer*	NC	3	0
Tosco Refining Company San Francisco Area Refinery At Rodeo	Manufacturer	CA	16	0
Total Petrochemicals & Refining Usa Inc	Manufacturer*	TX	3	0
Total Petrochemicals Usa Inc - Port Arthur Refiner	Manufacturer*	TX	3	0
Toyal America Inc	Manufacturer*	IN	4	0
Tpc Group Baytown Plant	Manufacturer*	TX	3	0
Tpc Group Llc	Manufacturer*	TX	3	0
Tpi Petroleum Incorporated	Manufacturer*	MI	3	0
Trademark Nitrogen Corp	Manufacturer*	FL	5	0
Transitions Optical Inc	Manufacturer*	FL	7	0
Tranter Incorporated	Manufacturer*	SC	2	0
Travis Lumber Company	Manufacturer*	AR	4	0
Tredegar Film Products	Manufacturer*	PA	2	0
Trenton Channel	Generator	MI	3	0
Tricor Refining Llc	Manufacturer*	CA	7	0
Trimble County	Generator	KY	15	0
Trinidad	Generator	TX	3	0
Trinity Industries Inc Plant #21	Manufacturer*	PA	2	0
Trinity Manufacturing Incorporated	Manufacturer*	NC	2	0
Tronox Llc	Manufacturer*	DE	16	0
Troxel Company	Manufacturer*	UT	5	0
Tulsa	Generator	OK	3	0
Turbine Airfoil Designs Inc.	Manufacturer*	PA	0	0
Turbomeca Manufacturing Inc.	Manufacturer*	NH	1	0
Turner & Seymour Manufacturing Company	Manufacturer*	FL	3	0
Twin Rivers Paper Mill	Manufacturer*	ME	1	0
Twin Rivers Tech-Painesville	Manufacturer*	OH	1	0
Tyco Healthcare/Mallinckrodt	Manufacturer*	NY	1	0
Tyler Pipe Co	Manufacturer*	MO	5	0
Tyonek Manufacturing Group	Manufacturer*	AL	41	0
Tyrone	Generator	KY	11	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Tyson Foods Inc	Manufacturer*	AR	3	0
U S Borax Incorporated Wilmington Facility	Manufacturer*	CA	11	0
U S Salt - Watkins Glen Refinery	Manufacturer*	OH	1	0
U.S. Alliance Coosa Pines Corporation	Manufacturer	AL	25	0
U.S. Borax Inc. C/O Us Borax And Chemical	Manufacturer	CA	15	0
U.S. Steel Group Gary Works	Manufacturer	IN	3	0
U.S. Truck Body	Manufacturer*	IL	1	0
Ucb Manufacturing Inc	Manufacturer*	NY	0	0
Ufp Elizabeth City Llc	Manufacturer*	NC	6	0
Ulbrich Precision Flat Wire	Manufacturer*	UT	1	0
Ultra Tab Labs	Manufacturer*	NY	1	0
Ultramar Inc Marine Terminal	Manufacturer*	CA	11	0
Umicore Cobalt & Energy Products	Manufacturer*	NC	0	0
Umicore Optical Materials Usa Inc	Manufacturer*	PA	3	0
Unilever Hpc North America	Manufacturer*	NC	0	0
Unilever Hpc Usa	Manufacturer*	MO	5	0
Unilever Manufacturing (Us) Inc	Manufacturer*	FL	3	0
Unilever Manufacturing (Us) Inc (Former Hpc-Usa)	Manufacturer*	KY	3	0
Unilever Research Us	Manufacturer*	NJ	2	0
Unilin Flooring	Manufacturer*	NJ	1	0
Union Carbide Corp	Manufacturer*	NY	0	0
Union Carbide Corp Seadrift Plant	Manufacturer*	TX	5	0
Union Carbide Corp South Charleston Facility	Manufacturer*	WV	2	0
Union Carbide Corp Technology Park	Manufacturer*	WV	2	0
Union Carbide Corp Texas City Plant	Manufacturer*	TX	4	0
Union Carbide Corp. Industrial Gases Inc.	Manufacturer*	MO	3	0
Union Carbide Industrial Gases Inc Linde Div	Manufacturer*	LA	3	0
Union Electric Steel Corp	Manufacturer*	PA	9	0
Union Foundry Co	Manufacturer*	AL	25	0
Unison Engine Components	Manufacturer*	CT	5	0
Unison Industries Llc	Manufacturer*	FL	6	0
Unison Industries Llc Plant 1	Manufacturer*	PA	11	0
Unison Industries Llc Plant 2	Manufacturer*	OH	11	0
United Aluminum Corporation	Manufacturer*	IA	3	0
United Distillers Manufacturing Inc.	Manufacturer*	IN	4	0
United Distillers Manufacturing Incorporated	Manufacturer*	KY	15	0
United Refining Company	Manufacturer*	PR	3	0
United States Gypsum Co	Manufacturer*	NY	2	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
United States Gypsum Co.	Manufacturer*	MS	4	0
United States Steel Corp	Manufacturer*	OH	1	0
United Sugars Corp	Manufacturer*	MN	5	0
United Suppliers Inc	Manufacturer*	IL	6	0
United Taconite Llc - Fairlane Plant	Manufacturer*	MN	1	0
United Technologies Corporation - Pratt & Whitney	Manufacturer*	IL	6	0
United Tool & Die Company	Manufacturer*	CT	5	0
Universal Stainless & Alloy Prod	Manufacturer*	PA	4	0
Universal Stainless & Alloy Products Inc	Manufacturer*	PA	9	0
University Of Iowa Main Power Plant	Generator	IA	8	0
University Of Notre Dame Power Plant	Generator	IN	4	0
Unocal Agricultural Products	Manufacturer	WA	8	3
Uop Llc Baton Rouge Plant	Manufacturer*	LA	3	0
Uop Llc Mccook Plant	Manufacturer*	IL	4	0
Uop-Shreveport Plant	Manufacturer*	LA	1	0
Upm Madison Paper Mill	Manufacturer*	ME	2	0
Upm Raflatac Inc Dixon Il	Manufacturer*	IN	6	0
Upm Raflatac Incorporated	Manufacturer*	NC	4	0
Urquhart	Generator	SC	3	0
Us Aluminum Inc	Manufacturer*	NJ	2	0
Us Amines (Bucks) Llc	Manufacturer*	AL	14	0
Us Amines (Portsmouth) Llc	Manufacturer*	VA	3	0
Us Army Holston Army Ammunition Plant	Manufacturer*	TN	29	0
Us Army Pine Bluff Arsenal	Manufacturer*	AR	2	0
Us Chemical & Plastics Catalyst Systems Div	Manufacturer*	OH	6	0
Us Doe Portsmouth Gaseous Diffusion Plant - Bwcs D	Manufacturer*	OH	13	0
Us Enrichment Corp Paducah Gaseous Diffusion Plant	Manufacturer*	KY	11	0
Us Gypsum Co	Manufacturer*	NY	6	0
Us Oil & Refining Co	Manufacturer*	WA	13	1
Us Polymers Inc	Manufacturer*	MS	14	0
Us Salt Llc	Manufacturer	NY	1	0
Us Scrap Metal Co Inc	Manufacturer*	IL	5	0
Us Steel Corp - Keetac	Manufacturer*	MN	0	0
Us Steel Corp - Minntac	Manufacturer*	MN	1	0
Us Steel Corp Great Lakes Works	Manufacturer*	MI	4	0
Us Steel Fairless Hills Works	Manufacturer*	PA	2	0
Us Steel Granite City Works	Manufacturer*	IL	3	0
Us Steel Tubular Products Inc Texas Operations Div	Manufacturer*	TX	3	0

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Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Usalco Baltimore Plant Llc	Manufacturer*	NJ	3	0
Usdoe Srs (D-Area)	Generator	SC	2	0
Usgypsum Co Galena Park	Manufacturer*	TX	3	0
Uss - Clairton Plant	Manufacturer*	SC	4	0
Uss Gary Works	Manufacturer*	IN	3	0
Uss Mon Valley Works - Edgar T Homson Plant	Manufacturer*	PA	4	0
Uss Mon Valley Works - Irvin Plant	Manufacturer*	PA	4	0
Uss Mon Valley Works, Edgar Thomson Plant	Manufacturer	PA	4	0
Uss Mon Valley Works, Irvin Plant	Manufacturer	PA	4	0
Uss-Posco Industries	Manufacturer*	CT	15	1
Utility Metals Division Fabricated Metals	Manufacturer*	KY	16	0
V H Braunig	Generator	TX	3	0
Vaagen Brothers Lumber Company	Manufacturer*	WA	6	0
Vac Magnetics Corporation	Manufacturer*	KY	17	0
Valdese Manufacturing Company	Manufacturer*	NJ	1	0
Valdese Weavers Incorporated	Manufacturer*	NC	1	0
Valdese Weavers Incorporated Plant #1	Manufacturer*	NC	1	0
Valero Refining - Texas Lp	Manufacturer*	TX	4	0
Valero Refining - Texas Lp Houston Refinery	Manufacturer*	TX	3	0
Valero Refining Co - Cali Fornia Benicia Refinery	Manufacturer*	CO	12	0
Valero Refining Co - Tennessee Llc	Manufacturer*	TN	8	0
Valero Refining Co -Oklahoma Valero Ardmore Refine	Manufacturer*	OK	2	0
Valero Refining Co.-New Jersey	Manufacturer	NJ	2	0
Valero Refining Meraux Llc Meraux Refinery	Manufacturer*	LA	6	0
Valero Refining Texas Lp Corpus Christi East Plant	Manufacturer*	TX	6	0
Valero Refining Texas Lp Corpus Christi West Plant	Manufacturer*	TX	6	0
Valero Renewable Fuels Albert City	Manufacturer*	IA	3	0
Valero Renewable Fuels Plant	Manufacturer*	OK	3	0
Valero Three Rivers Refinery	Manufacturer*	TX	3	0
Valley	Generator	TX	5	0
Valley	Generator	TX	0	0
Valmont	Generator	CO	2	0
Valvoline	Manufacturer*	MS	4	0
Van Den Bergh Foods Co	Manufacturer*	ME	3	0
Vandemark Chemical Inc	Manufacturer*	NY	2	0
Vanderbilt Chemical	Manufacturer*	CT	3	0
Vanguard Synfuels Llc	Manufacturer*	LA	2	0
Vapor Bus International	Manufacturer*	IL	4	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Veneer Technologies Albany Or	Manufacturer*	OR	9	0
Venus Laboratories Inc	Manufacturer*	NJ	2	0
Venus Labs. Inc.	Manufacturer*	IL	4	0
Verasun Charles City Llc	Manufacturer*	IA	5	0
Verasun Hartley Llc	Manufacturer*	IA	4	0
Vermont Yankee	Generator	VT	2	0
Vero Beach Municipal	Generator	FL	10	1
Verso Paper Androscoggin Mill	Manufacturer*	MI	1	0
Verso Paper Bucksport Mill	Manufacturer*	MI	2	0
Verso Paper Corp Sartell Mill	Manufacturer*	MN	0	0
Verso Quinnesec Llc	Manufacturer*	MN	1	0
Vertellus Health & Specialty Prod	Manufacturer*	PA	1	0
Vertellus Performance Materials Inc	Manufacturer*	NJ	6	0
Vertellus Specialties Inc	Manufacturer*	MI	1	0
Vertex Chemical Corp	Manufacturer*	IL	3	0
Vesuvius Usa Corp	Manufacturer*	IL	5	0
Vi Jon Laboratories	Manufacturer*	MS	3	0
Vi Jon Laboratories Incorporated	Manufacturer*	MO	3	0
Vi-Jon Inc	Manufacturer*	TN	10	0
Vibration Mountings & Controls	Manufacturer*	NJ	2	0
Vicksburg Petroleum Products Llc	Manufacturer*	MT	6	0
Victoria	Generator	TX	3	0
Victory Lumber	Manufacturer*	AR	6	0
Vienna	Generator	MD	5	0
Vinings Industries Inc	Manufacturer*	IN	11	0
Virginia	Generator	MN	0	0
Vision-Ease Lens Inc	Manufacturer*	PA	8	0
Viskase Cos Inc	Manufacturer*	AR	6	0
Vistakon Inc	Manufacturer*	MN	6	0
Vogle	Generator	GA	7	0
Volks Constructors	Manufacturer*	LA	4	0
Volunteer Asphalt Company	Manufacturer*	TN	27	0
Vulcan Asphalt Refining Company	Manufacturer*	AL	19	0
Vvf Illinois Services Llc	Manufacturer*	IL	3	0
W A Parish	Generator	TX	3	0
W G Sullivan Lumber Co Inc	Manufacturer*	AL	22	0
W H Maze Co Nail Div	Manufacturer*	IL	6	0
W H Sammis	Generator	OH	9	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
W H Zimmer	Generator	OH	17	0
W L Byrd Lumber Company Inc	Manufacturer*	MS	4	0
W N Clark	Generator	CO	2	0
W R Grace & Co - Conn Columbia	Manufacturer*	MD	2	0
W S Lee	Generator	SC	2	0
W W Wood Products Inc	Manufacturer*	MO	6	0
Wabash Aluminum Alloys Llc Syracuse Plant	Manufacturer*	OH	1	0
Wabash Environmental Technologies Llc	Manufacturer*	IN	17	0
Wabash River	Generator	IN	17	0
Wade Manufacturing Company	Manufacturer*	NC	2	0
Waiau	Generator	HI	6	0
Waldorf Corp	Manufacturer*	MO	8	0
Walter C Beckjord	Generator	OH	11	0
Wansley	Generator	GA	8	0
Warner Chilcott	Manufacturer *	NJ	2	0
Warren Steel Holdings Llc	Manufacturer*	OH	3	0
Warrenton Copper Llc	Manufacturer*	MO	4	0
Warrick	Generator	IN	13	0
Watauga Wood Products Incorporated	Manufacturer*	NC	0	0
Wateree	Generator	SC	1	0
Waterford 1 & 2	Generator	LA	3	0
Waterford 3	Generator	LA	3	0
Waters Corp	Manufacturer*	MA	4	0
Watson Laboratories - Florida	Manufacturer*	GA	6	0
Watson Laboratories Inc	Manufacturer*	FL	6	0
Watts Bar Nuclear	Generator	TN	27	0
Waukegan	Generator	IL	2	0
Wausau Paper Corp Brokaw Mill	Manufacturer*	WI	2	0
Wausau Paper Mills Llc	Manufacturer*	WI	2	0
Wausau Paper Mills Llc	Manufacturer*	MO	0	0
Wausau Paper Towel & Tissue Llc	Manufacturer*	KY	10	0
Wausau Papers Of New Hampshire, Inc.	Manufacturer	NH	2	0
Wausau-Mosinee Paper Corp. Specialty Paper Group Pulp And Paper Div.	Manufacturer	WI	2	0
Wci Steel Incorporated	Manufacturer	OH	3	0
Weaber Lumber Mill	Manufacturer*	PA	0	0
Webco Industries Inc Oil City Tube Div	Manufacturer*	PA	4	0
Webco Industries Inc Southwest Tube Div	Manufacturer*	PA	3	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Weidmann Electrical Technology Inc	Manufacturer*	OK	4	0
Weirton Steel Corporation	Manufacturer	WV	9	0
Wellman Incorporated Palmetto Plant	Manufacturer*	SC	3	0
Wellman Of Mississippi Inc	Manufacturer*	MS	5	0
Welsh	Generator	TX	3	0
Welspun Tublar	Manufacturer*	CO	2	0
Werner Co Chicago Division	Manufacturer*	IL	4	0
West Fraser Citronelle Lumber Mill	Manufacturer*	AL	14	0
West Fraser Inc Joyce Mill	Manufacturer*	LA	1	0
West Fraser Inc Whitehouse Lumber Mill	Manufacturer*	FL	6	0
West Fraser Leola Lumber Mill	Manufacturer*	AR	4	0
West Fraser Maplesville Lumber Mill	Manufacturer*	AL	21	0
West Fraser Mcdavid Lumber Mill	Manufacturer*	FL	9	0
West Fraser Opelika Mill	Manufacturer*	AL	16	0
West Linn Paper Mill	Manufacturer*	OR	9	2
West Pharmaceutical Services	Manufacturer*	FL	7	0
West-Ward Pharmaceutical Corp	Manufacturer*	NJ	6	0
Westchester Resco	Generator	NY	7	0
Western Dubuque Biodiesel Llc	Manufacturer*	IA	4	0
Western Refining Bloomfield Refinery	Manufacturer*	NY	8	0
Western Sugar Company	Manufacturer*	MT	1	0
Western Sugar Cooperative	Manufacturer*	ID	1	0
Westlake Petrochemicals Ethylene	Manufacturer*	LA	3	0
Westlake Polymers Lp	Manufacturer*	LA	3	0
Westlake Pvc Corp	Manufacturer*	KY	9	0
Westlake Vinyls Co	Manufacturer*	LA	4	0
Westmoreland Lg&E Partners Roanoke Valley I	Generator	NC	3	0
Westmoreland Lg&E Partners Roanoke Valley Ii	Generator	NC	3	0
Weston	Generator	WI	2	0
Westpoint Home Inc Opelika Facility	Manufacturer*	AL	20	0
Westpoint Stevens - Wagram	Manufacturer*	NC	0	0
Westpoint Stevens Incorporated	Manufacturer*	SC	1	0
Westvaco Bleached Board Division	Manufacturer	VA	2	0
Westvaco Corp	Manufacturer	PA	0	0
Westvaco Corp./Luke Mill	Manufacturer	MD	0	0
Westvaco Corporation	Manufacturer	KY	7	0
Westvaco, Kraft Division	Manufacturer	SC	3	0
Weyerhaeuser - Pine Hill Mill	Manufacturer*	AL	25	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Weyerhaeuser Company	Manufacturer	GA	12	7
Weyerhaeuser Company	Manufacturer	GA	3	7
Weyerhaeuser Company	Manufacturer	GA	25	7
Weyerhaeuser Company	Manufacturer	GA	1	7
Weyerhaeuser Company Cottage Grove	Manufacturer*	OR	7	0
Weyerhaeuser Mccomb Wood Products	Manufacturer*	MS	4	0
Weyerhaeuser Nr Co	Manufacturer*	AR	6	0
Weyerhaeuser Nr Co - Longview	Manufacturer*	WA	12	0
Weyerhaeuser Nr Co - Philadelphia Lumber	Manufacturer*	MS	2	0
Weyerhaeuser Port Wentworth	Manufacturer*	GA	11	0
Weyerhaeuser Raymond Sawmill	Manufacturer*	WA	14	0
Weyerhaeuser Rothschild	Manufacturer	WI	2	0
Weyerhaeuser Wright City Complex	Manufacturer*	OR	6	0
Weyerhaeuser -Longview, Wa.	Manufacturer	WA	4	5
Weylchem Us Inc	Manufacturer*	SC	1	0
Wheatland Tube Co	Manufacturer	PA	4	0
Wheatland Tube Co - Clark St/Spw	Manufacturer*	PA	4	0
Wheeler Frackville Energy Co Inc	Generator	NJ	2	0
Wheeling Pittsburgh Steel Steubenville South Mingo	Manufacturer*	OH	9	0
Wheeling-Nisshin	Manufacturer*	WV	9	0
Wheeling-Pittsburgh Steel Corp. - Allenport Plant	Manufacturer	PA	2	0
Wheeling-Pittsburgh Steel Corp. - Yorkville Plant	Manufacturer	OH	1	0
Whemco -Steel Castings Inc	Manufacturer*	PA	9	0
White Bluff	Generator	AR	2	0
White Convey ors Inc	Manufacturer*	NV	6	0
White Systems Inc	Manufacturer*	NJ	6	0
Whiting Refinery	Manufacturer	IN	3	0
Wickliffe Paper Company	Manufacturer*	LA	5	0
Widows Creek	Generator	AL	34	0
Wilco Refining Llc	Manufacturer*	KY	10	0
Wilkes	Generator	TX	3	0
Will County	Generator	IL	4	0
Willamette Industries Inc.	Manufacturer	LA	1	0
Willamette Industries Inc. Taylor Div.	Manufacturer*	LA	1	0
Willamette Industries, Johnsonburg Mill	Manufacturer	PA	0	0
William F Wyman	Generator	ME	8	0
Williams	Generator	SC	8	0
Williams International Corporation	Manufacturer*	UT	3	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Williams Olefins Llc Geismar Ethylene Plant	Manufacturer*	LA	4	0
Willow Glen	Generator	LA	3	0
Willow Island	Generator	WV	6	0
Wilmarth	Generator	MN	2	0
Wiltew Inc	Manufacturer*	AL	14	0
Winnetka	Generator	IL	2	0
Winyah	Generator	SC	3	0
Wireco Worldgroup Chillicothe Facility	Manufacturer*	MO	3	0
Wireco Worldgroup Sedalia Facility	Manufacturer*	NC	2	0
Wirerope Works Inc.	Manufacturer*	SC	0	0
Wireway/Husky Corporation	Manufacturer*	NC	1	0
Wisconsin River Division	Manufacturer	WI	2	0
Wise Alloys Llc - Alloys Plant	Manufacturer*	AL	46	0
Wise Alloys Llc Sheffield Ops	Manufacturer*	AL	46	0
Witco Chemical Corp Pearsall Div	Manufacturer*	NJ	2	0
Wko Inc	Manufacturer*	WV	9	1
Wolf Creek	Generator	KS	4	0
Wolf Lake Industrial Ctrs Hammond Depot	Manufacturer*	KS	3	0
Wood River	Generator	IL	5	0
Wood River Refinery	Manufacturer*	IN	5	0
Woodland Pulp Mill	Manufacturer*	ME	1	0
Woodward Fst	Manufacturer*	MO	1	0
Woodward Governor Co	Manufacturer*	IL	6	0
World Wood Corp.	Manufacturer*	NC	6	0
Worthington Steel Co	Manufacturer*	AL	41	0
Wr Grace & Co Inc Construction Products Div	Manufacturer*	NJ	2	0
Wr Grace Chattanooga Plant	Manufacturer*	TN	27	0
Wr Grace Construction Products	Manufacturer*	MA	0	0
Wyandotte	Generator	MI	4	0
Wyeth	Manufacturer*	NY	1	0
Wyeth Llc Fort Dodge Animal Health Div	Manufacturer*	IA	5	0
Wyeth Pharmaceuticals	Manufacturer*	NY	2	0
Wyeth-Ayerst Laboratories Inc	Manufacturer*	PA	3	0
Wyeth-Lederle Vaccines And Pediatrics	Manufacturer*	NC	1	0
Wynnewood Refining Co	Manufacturer*	OK	2	0
Wyoming Refining Co	Manufacturer*	AR	1	0
X-Chem Inc	Manufacturer*	LA	6	0
Xethanol Biofuels Llc	Manufacturer*	IL	4	0

CWA 316(b) Biological Evaluation

Facility Name	Industry	State	Habitat Overlaps	Critical Habitat Overlaps
Yale University West Campus	Manufacturer*	CT	3	0
Yates	Generator	GA	8	0
Yates Bleachery Co	Manufacturer*	GA	29	0
Yh America Inc (Sealant Div)	Manufacturer*	KY	11	0
Yorktown	Generator	VA	6	0
Yorktown Refinery	Manufacturer	VA	6	0
Yorktown Refinery	Manufacturer	VA	1	0
Yorktowne Paperboard	Manufacturer*	SC	3	0
Zaclon Llc	Manufacturer*	OH	0	0
Zak Limited	Manufacturer*	KY	17	0
Zinc Corporation Of America	Manufacturer*	PA	2	0
Zuni	Generator	CO	2	0
Zxp Technologies Ltd	Manufacturer*	TX	3	0



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

JUN 18 2013

OFFICE OF WATER

Donna Wieting
Director, Office of Protected Resources
National Marine Fisheries Service
1315 East-West Highway, F/PR3
Silver Spring, MD 20910

Gary Frazer
Assistant Director, Endangered Species
United States Fish and Wildlife Service
4401 North Fairfax Drive
Arlington, VA 22203

Subject: Initiation of Formal Consultation on the EPA's Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities

Dear Ms. Wieting and Mr. Frazer:

The U.S. Environmental Protection Agency is requesting formal consultation, pursuant to Section 7(a)(2) of the Endangered Species Act and implementing regulations at 50 CFR § 402.14(c), with the National Marine Fisheries Service and the U.S. Fish and Wildlife Service (the Services) on the EPA's "Final Regulations to Establish Requirements for Cooling Water Intake Structures at Existing Facilities and Amend Requirements at Phase I Facilities." Pursuant to 40 C.F.R. § 402.12, I have sent under separate cover the EPA's Biological Evaluation. The BE evaluates the potential effects of the EPA's action on listed and proposed species and designated and proposed critical habitat and assesses whether any such species or habitat are likely to be adversely affected by the action.

Thank you for the considerable time and effort that you and your staff have devoted to the informal consultation process that we initiated in July 2012 with NMFS and in October 2012 with FWS, including multiple briefings on the contents of the draft 316(b) rule, discussion of the proposed outline and methodological approach for a biological evaluation, and review of two drafts of the BE.

As we have discussed, the 316(b) rule when promulgated will reduce the current mortality of aquatic organisms, including threatened and endangered species, at cooling water intake structures. The magnitude of mortality reduction, however, will depend on the type, size, and location of facilities, the degree of improvement in CWIS performance required by the rule, the nature and number of T&E species in the vicinity of CWISs, as well as other site-specific factors. Because the 316(b) rule will reduce impacts to listed species from cooling water take structures, the Agency continues to believe that it will not cause adverse effects and will benefit affected

species whether threatened, endangered, or otherwise. Nonetheless, the EPA has decided to request formal consultation to ensure full and expeditious consideration of the impacts to listed species under section 7(a)(2). Consequently, the EPA is requesting initiation of formal consultation under Section 7 of the ESA because, as discussed in the BE, after promulgation and implementation of the 316(b) rule, the rule may allow as many as 215 T&E species and 30 critical habitats of T&E species to continue to be affected.

The sections below provide the necessary information for initiating consultation pursuant to 50 CFR 402.14(c).

I. Description of Agency Actions

The action on which the EPA requests formal consultation is a regulation the EPA is in the process of finalizing, to implement CWA Section 316(b). Section 316(b) requires that the EPA establish standards for cooling water intake structures that reflect the best technology available for minimizing adverse environmental effects. The final rule will be implemented through conditions included in NPDES (National Pollutant Discharge Elimination System) permits, required under section 402 of the CWA, for facilities that withdraw cooling water from waters of the United States.

On April 20, 2011, the EPA published proposed standards for cooling water intake structures at all existing power generating facilities and existing manufacturing and industrial facilities. The proposal included requirements for facilities that have a design intake flow of greater than two million gallons per day from waters of the United States and use at least 25 percent of the water they withdraw exclusively for cooling purposes on an actual intake flow basis. The proposal included provisions to address impingement (pinning of organisms against intake screens) and entrainment (organisms sucked through intake screens). While the proposal included an impingement mortality performance standard, the EPA did not propose uniform entrainment controls. Rather, the EPA proposed that entrainment requirements should be established by NPDES permitting authorities on a site-specific basis. In connection with the development of these requirements, facilities with an average intake flow of more than 125 mgd would need to develop an entrainment characterization study to help permit Directors determine facility-specific entrainment requirements.

The EPA has included in the BE a description of the number of facilities subject to the rule. The EPA has accurate information on the location of electric generators, but does not have complete information on the location of all manufacturing facilities with a CWIS. To compensate for this, the EPA has included information in the BE on all manufacturers in the industries known to use cooling water, even though some of these facilities will not have a CWIS.

II. Description of Action Area

The action area for the 316(b) rule includes “waters of the United States,” defined in 40 CFR § 122.2 as certain inland waters and the territorial sea extending three miles from shore. As discussed in the BE, the EPA’s analysis examined CWIS impacts and regulatory benefits in seven aquatic study regions: California, North Atlantic, Mid-Atlantic, South Atlantic, Gulf of

Mexico, Great Lakes, and Inland. The study regions were chosen based on regional similarities within ecosystems, aquatic species, and characteristics of commercial and recreational fishing activities. Based on the delineation between marine and freshwater ecosystems, these seven study regions were broadly categorized into Coastal, Great Lakes, and Inland regions.

III. Description of Listed Species or Designated Critical Habitat That May Be Affected

As discussed in the BE, the 316(b) rule is likely to affect 215 T&E species with habitat ranges that overlap with at least one CWIS. Additionally, the critical habitats of 30 T&E species overlap with at least one CWIS. Few data are available for the EPA to estimate the mortality of T&E species at CWISs subject to the 316(b) final rule. Consequently, to assess the potential for impacts of the 316(b) rule on T&E species, the EPA identified current spatial overlap between the locations of CWISs subject to the rule and the location of federally designated critical habitats or habitat ranges of T&E species. The overlap analysis was conducted for all life history stages for all aquatic T&E species with available data. However, due to the uncertainty regarding the location of all CWISs, the EPA was not able to conclusively identify all listed species or associated life stages that could be potentially affected. Accordingly, the EPA followed ESA regulations requiring the assumption of a reasonable worst case analysis when more accurate data are unavailable.

The BE addresses aquatic T&E species as well as aquatic-dependent T&E species which include reptiles, birds, and terrestrial mammals whose diet contains an appreciable proportion of aquatic organisms. These species are likely to be only indirectly affected by the 316(b) rule.

IV. Description of How Agency Actions May Affect Listed Species

The EPA attempted to estimate the changes in mortality as a result of the 316(b) rule for all T&E species. Sufficient data, however, have not been collected at CWISs to estimate the baseline or amount of future reduction in mortality of T&E species. The 316(b) rule, as currently written, would require facilities to collect source water baseline biological characterization data, entrainment biological characterization data, and where applicable, biological performance studies over a two year period prior to submission of an application for a permit. These data will enable permit Directors, and the Services, to determine whether T&E species are present, whether they are being harmed, and to require appropriate CWIS controls.

V. Next Steps

My staff and I have appreciated the positive, collaborative effort among our agencies during the informal consultation process of developing the BE. We look forward to continuing that relationship through formal consultation. Separate from this letter, we are providing you with a predecisional, deliberative copy of the draft 316(b) rule along with a copy of the BE. Additionally, my staff are providing the Services with the raw data files used to produce the BE. As we have discussed, we will schedule reoccurring biweekly meetings with the Services to assist with your preparation of the biological opinion. We will also schedule regular check-in meetings with senior management at our respective agencies to ensure steady progress throughout this consultation.

Please do not hesitate to call me at (202) 566-1822 or Julie Hewitt at (202) 566-1031 if you or anyone on your staff has questions regarding this matter.

Sincerely,

A handwritten signature in dark ink, appearing to read "Robert K. Wood". The signature is stylized with a large, looped "R" and a cursive "Wood".

Robert K. Wood, Director
Engineering and Analysis Division